Indian Archaeology

1985-86 — A REVIEW









INDIAN ARCHAEOLOGY 1985-86
—A REVIEW

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PREFACE

In the process of clearing the backlog of publications of the Archaeological Survey of India, I am happy to place before the readers and scholars, *Indian Archaeology 1985-86— A Review.* Like its earlier issues, it incorporates matter on archaeological activities in the country during 1985-86 besides a summary of results of excavations at Hamad Town, Bahrain, where a team of archaeological experts of Archaeological Survey of India carried out excavations at the invitation of Government of Bahrain. The succeeding issues of the *Review* are also under preparation.

However, I would like to add that since 1989 to June 1990, Archaeological Survey of India has been hectically engaged in bringing out besides the present issue of *Indian Archaeology 1985-86—A Review, Temples of the Pratihara Period in Central India, Temples of Khajuraho Vol. I & II, Excavations at Surkotada, Epigraphia Indica Vol.41* and *Gupta Inscriptions of Bagh Caves.*

As usual for this issue of *Indian Archaeology* the matter was received from various sources and I gratefully acknowledge the cooperation of those whose contributions have been utilised here. The delay in the publication of this issue is regretted and I apologise for any inaccuracy which may have crept in sorting out, compiling and editing the material for this issue. However, the Archaeological Survey of India or I have no responsibility for factual information which is supplied by the contributors.

I take this opportunity to acknowledge with thanks the assistance and also express my sincere appreciations for the work done by Sarvashri K.N. Dikshit, Director (Publication), Chhering Dorje, Superintending Archaeologist, Smt. Shubra Pramanik, Deputy Superintending Archaeologist, K.P. Padhy, Senior Technical Assistant and J.C. Gupta, Production Officer in the Publication Branch of the Archaeological Survey of India who have seen the issue through its editing and publication. Ms. VAP Enterprises, New Delhi, deserve appreciation for publishing this issue.

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18th June, 1990

JAGAT PATI JOSHI

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INDIAN ARCHAEOLOGY 1985-86
—A REVIEW

I. EXPLORATIONS AND EXCAVATIONS

ANDAMAN AND NICOBAR ISLANDS

1. EXPLORATION IN SOUTH ANDAMAN.— B.P. Bopardikar, assisted by S.N. Raghunath, S.S. Gupta, A. J. Nambiraju, Pyare Singh and K.M. Girhe of the Prehistory Branch of the Archaeo logical Survey of India[1] carried out a preliminary exploration in South Andaman and Strait Islands to assess the prehistoric potentialities of the archipelago in general and Strait Island in particular.

A number of kitchen-midden sites locally known as Sippi tekries were discovered between Port Blair and Hope town in South Andaman. These included Badmash Pahar, Mithakhari, Kudkuchcha, Hathi Top, Dandas Point, Namunaghar quarry, Bamboo Flat and Kanyapuram. A large number of sites were found in clusters located along the creek, while a few were situated near the fresh water source. All these sites occurred in the form of either a mound or a heap consisting of mollusc shells. Among shells, oysters dominate over gastropods. The dimensions of the sites varied considerably from 5 x 5m to 30 x 5 m in diameter and from 1 to 8m in height. The compactness of the deposit at these sites also differed as some sites were more compact than others. The mounds yielded a variety of pottery types such as shallow basins, deep bowls and dishes with knife-edged rim. All of them were handmade, ill fired and probably prepared by coiling technique. A wide variety of incised decorations were noticed on the surface of the potsherds. Some of the sherds were having decorations on both the sides. The antiquities recovered from the surface were a thick blade, prepared on chert and a polished pounding stone.

A survey was conducted in Strait Island lying north of Port Blair and on the way to Havloc Island. The island has an area of 2 sq.km. Only one kitchen midden site was found near the tribal settlement. Practically, all the deposits were completely destroyed by the tribals for extracting lime from the shells.

ANDHRA PRADESH

2. EXCAVATION AT ADURRU, DISTRICT EAST GODAVARI.— The Hyderabad Circle of the Survey under the direction of H.N. Singh, assisted by D. Hanumantha Rao, M.V.N. Krishna Rao, R.S. Kulkarni, T. Chenchuratnam and Gayasuddin, carried out excavation at Adurru with a view to expose the Buddhist stupa and monastery complex. The Buddhist remains cover an area of 3200 square m (approximately 2.04 acres) with a 4m high mound. The excavation revealed a sprawling stupa built on a plan of spoked wheel within a wheel together with its components.

Out of the concentric circles the outer consisted of twenty-four spokes and twenty-four cells and the inner sixteen spokes and sixteen cells. The diameter of the hub was 5.30m. The dome

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[1]The Archaeological Survey of India is referred to in the following pages as the Survey.

raised over the outer concentric circle left a lime-plastered lm wide space on the drum as an offset. The circumference of the stupa was 64cm with a diameter of 20.40m with an extant height of 3.45m from the plinth level. Below the plinth level, it had eight brick courses, the last one resting over the natural sand. On all the cardinal directions, the stupa was provided with projected platforms, a salient feature of the Andhra stupas. There is no evidence for the existence of a railing around the stupa. But there exists a brick wall, 0.60m in breadth, at a distance of 6m from the eastern platform, its function could not be ascertained due to limited excavations.

Towards the northern side of the stupa an apsidal *chaitya-griha,* measuring 16.10m in length and 6.55m in width, was exposed. The nave portion measures 8.80m in length and 3.45m in width. Within the *chaitya griha,* there is a provision for a miniature stupa with a diameter of 2.35m. The *chaitya* has an entrance doorway measuring 1.00m in width. The longitudinal brick wall of the *chaitya* has ten brick courses (pl. I).

Towards the north eastern side of the stupa a circular shrine in brick was exposed. The shrine had an entrance porch measuring 2.45 X 1.30m. The diameter of the shrine was 6.30m. The circular wall of this shrine, which was 1.04m in breadth, had eight extant brick courses. It was enclosed within a broad brick wall of 6.20m in length on the northern and southern sides functioning probably as the boundary wall for the entire complex. The southern end abutted the shrine.

The east-west and the north-south sections of the stupa and *chaitya* revealed 5 layers, of which layer 1 was composed of very thick compact brownish earth. Layer 2 was composed of compact brownish soil, mixed with brick bats and was the sealing layer of the *stupa-chaitya* and circular shrine and part the stupa and platforms. Layer 2(a) being debris was composed of loose brownish soil with brick bats whereas layer 3 was a structural layer composed of brownish soil with small brick-bats which sealed the floor of stupa-*chaitya*. Layer 4 was composed of brownish earth of rammed floor with brick-bats which was the working level of the stupa, whereas layer 5 was the natural riverine sand.

Pottery was recorded in limited quantity. Sherds of jars, troughs, dishes and bowls of red and kaoline potteries were recovered.

Only a few antiquities were found. The noteworthy amongst them was a fragment of a carved chalcedony with lime plaster sticking on its back.

On the basis of the pottery types and stupa architecture the structures are datable to second-third century AD.

3. EXPLORATION IN DISTRICT GUNTUR.— G.V. Srinivasa Rao of Hyderabad Circle of the Survey while exploring the Gundlakamma River basin discovered two Neolithic sites, *viz.* Ainavolu and Tangirala in Vinukonda taluk. He also discovered an early historical site at Mukkellapadu and a medieval site at Chintalacheruvu in the same taluk.

4. EXPLORATION IN DISTRICT HYDERABAD.— During exploration along the bank of the river Musi near the cave temple of Lakshminarasimha in Chaitanya Puri, an eastern suburb of Hyderabad City, T.V.G. Sastri and G.V. Ramakrishna of Birla Archaeological and Cultural Research

Institute, Hyderabad, found microliths made of chert, jasper and agate and also a red ware pottery.

The cave temple of Lakshminarasimha, formed of huge vertical boulders, contains an inscription of six lines showing early Brahmi characters on one of the vertical boulders, giving reference to one Govindaraja vihara. Parabrahma Sastry, who published the inscription in *Bharati,* July 1983, opines that the name of the vihara could be associated with the Vish-nukundin King Govindavarman who reigned between AD 422-462. A number of bricks and brickbats were also recovered while digging the foundation of the new houses.

5. EXPLORATION IN DISTRICT KRISHNA.— In the course of village-to-village survey, J.Vara Prasada Rao of Hyderabad Circle of the Survey explored the following sites of archaeological interest:

Taluk	*Village/Site*	*Cultural assemblage*
Tiruvur	Gollapudi	Medieval site and loose sculptures
-do-	Kothapalle	Acheulian chopper-chopping tools, hand axes, scrapers and discoids
-do-	Pathaputrela	Early medieval site with dull burnished red ware
-do-	Vavilala	Medieval site

6. EXPLORATION IN DISTRICT MAHBUBNAGAR.— In the course of village-to-village survey, S.V.P. Halakatti of Hyderabad Circle of the Survey explored the following sites:

Taluk	*Village I Site*	*Cultural assemblage*
Gadwal	Lingapuram	A ruined mud fort belonging to Gadwal *Sa-masthanam*
-do-	Makthal	Temples of Kakatiya period with Telugu-Kan-nada inscriptions

7. EXPLORATION IN DISTRICT PRAKASAM.— In the course of village-to-village survey, P. Si-taramamurthy of Hyderabad Circle of the Survey discovered the following sites:

Taluk	*Village/Site*	*Cultural assemblage*
Kandukar	Chalamchala	Late medieval temple
-do-	Chinnaletarapi	Early historical site

Taluk	*Village I Site*	*Cultural assemblage*
Kandukar	Gudluru	Early medieval and late medieval site
-do-	Karedu	Late medieval temple Late medieval
-do-	Kottapeta	temple

8. EXCAVATION AT PEDDAVEGI, DISTRICT WEST GODAVARI.— In continuation of last year's work *(Indian Archaeology 1984-85 - A Review*[1], pp. 7-8) the Excavation Branch (I) of the Survey under the direction of I.K. Sarma, assisted by G.V.S. Rao, S.K. Lekhwani, S.K. Mitra, N.C. Prakash, Mohinder Singh, R.K. Roy, S.V. Sutaone, P.M. Bhope, M.U. Qureshi, H.J. Barapatre and A.U. Ganar, has undertaken the excavation at the ancient historical city of Vengipura, now a sprawling village called Peddavegi with ancient mounds deeply dug out at various places within the village, and its surroundings. The place is historically famous as the capital of *An-To-Lo,* i.e. Andhra during the times of Salankayanas who rose to power soon after the Ik-shvakus of Vijayapuri (AD 350-450). It was also a prominent city under the Vishnukundin, Eastern Chalukyan and later dynasties who ruled coastal Andhra from fifth to eleventh century AD.

Excavation was undertaken at the site called Dhanam-Dibba' literally mound of wealth north of the village. R. Sewell paid a visit to this place for the first time in 1888 and saw the mound being cut by the locals and noted that The centre of this mound had not been dealt, and if, as appears, this is a Stupa, the relic casket may still be there". It may be recalled that the Chinese traveller Hiuen Tsang (AD 620-644) made a mention of a Stupa caused by Asoka-Maurya at Ping-Ki-Pu-lo i.e. Vengipura. With a view to expose fully the structures and also record the sequence of the cultural assemblage trenches were laid horizontally on a grid pattern. Two phases of activity IA and IB have come to light both belonging to the early historical period.

Phase IA is dated to fourth to fifth century AD while Phase IB is assigned to the end of fifth to seventh century AD. A massive structural complex of brick was exposed at a depth of two metres below surface occupying the middle part of the mound. The unit consists of a stupa at the centre, over a square platform measuring 12.90m and of 1.75m high. It is noted for solid brickwork laid in parallel courses. The brick sizes conform to 46 X 23 X 7cm. The base of the dome *(anda)* is squarish on plan, measuring 10.70m on each side externally. The layout of the bricks at the centre conforms to a stepped pattern, the bottommost cube measuring 3.06m. Thus the basal plan of the stupa is somewhat unusual to the region. Its foundational make up below the first brick course consisted of river sand alternated by a thick layer of rolled stones mixed with compact clay and silt. The brickwork was overlaid on such a well-prepared foundation and the stupa is a free-built solid one. In its central layout it resembles in some respects the famous Ghantasala stupa, District Krishna, and approximates the latter in size as well. In its earlier phase (IA) a close circumambulatory passage of 45cm width was provided

[1]This publication is referred to in the following pages by the year only.

around the dome. This pathway was paved with cutstone slabs at the bottom as noticed in its eastern wing. Besides, the dome face appears to have been originally covered with carved limestone slabs which were removed by the locals who burrowed the site for stones during a canal construction in 1888. The broad outer *pradakshina* around the drum (pl. II), virtually a *pada vedi* at the base, with a width of 2.40m has specially been paved with bricks all-around (floor-1) at the bottom. This was covered up during the subsequent phase-IB by raising the floor levels twice (floors,2 and 3), and correspondingly the height of the *prakara* was increased. The height of the stupa may have also been raised. At the four corners of this square compound, rectangular chambers measuring 2.70 x 2.25m were caused by adding small partition walls. The purpose of these corner chambers was not clear. Generally, stupa in Andhra possess *ayaka* platforms at the four cardinal projections of the drum. In the present example, however, no such arrangement is seen. There is no sculptural decoration around the drum though it is preserved to a height of 1.75m. The *anda* part is preserved to a meagre height of 1.20m but originally it may have risen to nearly thirteen metres. The upper portion as well as the passage around the *anda* base have been considerably damaged by the random digs of 1888 referred to above. Further, the eastern extant portion is marked by an entrance porch measuring 8.30m X 4.5m with a narrow stepped descent.

The associated finds of Phase-IA include mainly pottery of plain red slipped and dull red wares, a few red polished sprinklers, apart from a meagre quantity of stucco flowers, a human face, a limestone plaque depicting a lower part of *srivatsa,* and a fragment showing in bas-relief a *nandi* by the side of a stupa etc. These are meagre evidences but nevertheless point out the presence of some decorative sculptures of Buddhist creed. It may, however, be recalled that in the year 1927, the then Chief Epigraphist found an octagonal pillar shaft of Palnad limestone with a four line inscription in Brahmi characters of fourth century AD. The record revealed a set up of a *mandapa* affiliated to the *Aparasaila* sect by a person hailing from Ghantasala. From the characters of this record as well as the lotus-medallion over its mid-section, its association with the site, Phase-IA of Peddavegi stupa can be assigned to fourth century AD. This date gets confirmed by the absence of certain diagnostic pottery types like Black-and-Red, Rouletted and Russet Coated Andhra pottery. Hence a post-Ikshvaku date to the stupa is fully justified. The stupa complex appears to be the work of the Salankayana rulers, particularly Nandivarman-II (AD 400-430), who according to a pillar inscription from near-by Guntupalle (27km north), is reported to have caused some major donations to the Buddhist viharas while ruling from the victorious city of Vengi *i.e.* Peddavegi in spite of his being a *Paramabhagavata* and a devotee of *Chitraradhasvami* (Suryanarayana).

In the next Phase IB assignable to the Vishnukundin period, end of fifth to seventh century AD, there appears to be a total change. The stupa was no more found to be important and the occupants built Brahmanical temples out of soft red sandstone like the Vakataka rulers of Vidarbha region with whom they had family ties. The pottery of the earlier phase continued but other notable finds of this period are Vishnukundin copper-plated circular coins, lion X temple type, a stray piece of silver punch-marked coin, an other bigger copper coin of the Eastern Chalukyan vintage, an array of architectural fragments and sculptured parts like a life-size massive *Gajamukha* base moulding, an upper part of an image of Hari-Hara evidently

from a ruined temple. Apart from these architectural members several decorative sculptures like *bhutaganas* from a frieze, capital components of *kudya-stambhas* etc. and a sub-plinth *(upana)* of a rectangular temple facing north at the south-east corner of the mound deserve special notice.

Among the other important cult objects assignable to this very phase-IB, is a unique seated Vinayaka, hand-modelled, well-baked clay figure in smoky grey colour. He is two-handed with typical elephant-head and seated-at-ease on large elephant hips. Except *sirastraka* and a *vastra-mekhala* no ornamentation is present. The figure is a rare example, confirming the popularity of the cult of Vinayaka during the Vishnukundin times. In fact Madhavavarman II, consecrated an image of *Dantimukha Svamin* during his 33rd regnal year (485), according to an inscription from Velpura, District Guntur.

Other minor antiquities documented from the digs, as well as from the nearby mounds include limestone plaques depicting in relief, Mahishamardini, *Srivatsa Sri* with a symbolic Sakti; fragmentary plaque depicting *Viras,* besides a unique terracotta figure of a goddess with a leonine face and snakes as ornaments *(sarpabhushana)* holding up in her two-hands lilies and seated on a serpent head with bent knees. These impressive religious objects throw light on the worship of Siva, Sakti, *srivatsa* and related cults. An interesting object is a grey sandstone plaque measuring 7.5 X 7 X 2.5cm depicting five *lingas* in a row over a *padma pitha* emphasizing the symbolic aspect of Siva as *Panchanana* or *Saranana.* All the above objects are datable to fifth - early sixth century AD, on stylistic grounds and cult affiliations. Besides the above, systematic documentation of loose sculptures and images was undertaken. These were found in the dug-out pits within the village and nearby fields, away from their original contexts. Mention is to be made of a unique icon of *Ekadasamukha-Rudra* with twenty four hands (pi. Ill), Suryanarayana, Ganesa, Kalabhairava (pl. IV) and flying Garuda, all datable to sixth-seventh century AD. In particular the two images of Kalabhairava found respectively at the north-east and northern boundary beyond the ruined outer fortifications of this ancient city are valuable examples of iconography. Kalabhairava was the governing deity *(Kshetra-palaka)* of this ancient city of Vengi, as at the sacred Varanasi.

9. EXPLORATION IN DISTRICT WEST GODAVARI.— The Excavation Branch(I) of the Survey under the direction of I.K. Sarma, assisted by S.K. Lekhwani, S.K. Mitra, N.C. Prakash and M.U. Qureshi discovered in the village of Badarala, Chintalapudi taluk, examples of circular clay huts locally called 'Boggu-Gullu'. They simulate the rock cut circular *chaitya* of Guntupalle in every detail. Though of recent times, they are of special interest to us affording close ethno-logical parallels. The mode of building up of these huts is unique and thatch to begin with, a thick layer of well-levigated reddish earth mixed with husk and dung was applied on both the faces. The wattle frame at the core served like the metal frame in a reinforced-concrete structure. The inner hollow was then filled up with organic materials like wooden logs, leaves, etc. and the clay walled hut is subjected to firing in the same way as of a brick kiln. The entire structure was burnt uniformly in reducing conditions resulting in brick red rocky surface externally and black internally, with the clear impressions of wattle over the intrados. These huts are locally called *gullu,* a plural for *Gudi,* i.e. temple.

The locals used them to keep the cattle, specially *Bos,* which symbolises the sacredness attached to them. Such circular out-houses within larger dwellings are characteristic of the area around Guntupalle and used as kitchens with a small niche for personal deity inside, serving a double purpose *viz., Pakavata* as well as *Pujagriha,* an architectural tradition inherited from Buddhist monasteries.

At the village of Ratnalakunta in the same taluk, ruins of a early medieval temple locally known as Ratalammagudi were noticed. The images found at the place included a two-handed Mahishamardini, seated Chamundi, Trimukha-Brahma, four-handed Vishnu, Saptamatrikas, two-handed Surya, Bhairava and Kartikeya with a short *dhvaja* having *kukkuta lanchana,* the peacock behind the god standing to right. These icons as well as the architectural parts out of soft red sandstone belong to the Vengi-Chalukya period indicating temple(s) near the right bank of an ancient tank which is about one km south of the village.

ASSAM

10. EXPLORATION IN DISTRICT DARRANG.—In the course of exploration H. Telagu of the Guwahati Circle of the Survey noticed a rock cut cave and temple remains on the hill-top locally known as Dhalpur Pahar including engravings on a boulder and some fragments of sculptures on the foothills of the same area. He also noticed a stone pillar, one decorated stone piece with *kirtimukha,* a standing Vishnu image and also some architectural remains at Nijarangamati and Garukhuti.

BIHAR

11. EXCAVATION AT TARADIH (BODH-GAYA), DISTRICT GAYA.— In continuation of the last year's work *(1984-85,* pp.9-11), Ajit Kumar Prasad of Directorate of Archaeology and Museums, Bihar, assisted by K.N. Singh, L.P. Singh, U.S. Pandit, Parvez Akhtar, D.P. Gupta, S. Ranjan and S.S. Singh, R.S. Singh, L.B. Mishra, Md. Sarfuddin, S.K. Sinha, S.D. Roy, R.D. Tiwari, A.K. Varma, N. Thakur, Amitabh Roy and S.K. Varma under the general guidance of Sita Ram Roy and Naseem Akhtar, resumed excavations at Taradih mound, located to the south-west of Mahabodhi temple at Bodh-Gaya. The main objectives of this year's excavation was to collect more details of Neolithic and Chalcolithic periods and also to ascertain the extent and plan of the monastic complex of the Pala period. The excavation revealed seven cultural periods.

Period I represented a 60cm thick cultural deposit of the Neolithic period accumulated right on the natural soil. On the basis of pottery the Neolithic period may further be divided into two phases. Phase A was associated with the handmade red pottery, both slipped and burnished. The main ceramic types included vases, bowls etc. A few domestic ovens were also noticed. Phase B was marked by the appearance of handmade burnished grey ware although a few sherds produced by turn-table were also recovered. The earlier ceramic industry also continued. Numerous cord impressed sherds were also found. The main pottery types included *handis* with outturned rim, vase with flared rim and narrow mouth, ring based bowls, deep bowls, perforated bowls, knobbed lids, storage jars etc. The cooking vessels had usually

rusticated base. A few larger pots like storage jars were decorated with thumb and rope impressed designs. Some burnished grey ware pieces bore the evidences *of* post-firing ochre paintings on their rim and profile.

Some hearths of different shapes and sizes were also encountered at this level, the larger hearths were probably utilized as community kitchen.

The notable antiquities of stone included points, balls, etc. The objects of bone were arrowheads, points etc. The objects of terracotta were represented by beads and animal figurines.

Period II represented the cultural deposit of the chalcolithic complex. Although the pottery of this period was mainly wheel thrown, but the evidences of handmade character, though in less frequency, still continued. The period was distinguished by the appearance of copper and black-and-red ware and absence of cord impressed potsherds and post-burnished grey ware with post firing ochre paintings.

The main pottery types in black, red, black-and-red wares included deep bowl, shallow bowl, bowl with horizontally splayed out rim, bowl with globular profile and outturned featureless rim, perforated bowls, bowl with ring base, dishes with carination on the waist and with convex and straight sided rim, vase with sharp carination at the neck and outturned thickened rim, coarse basin with outturned thickened rim, storage jars etc.

Important antiquities recovered included copper objects like an arrowhead and a fish-hook, terracotta female and animal figurines, beads of stone and steatite apart from stone pendants, points and balls etc.

Period III was distinguished by the appearance of iron. The black-and-red ware, black ware and red ware of the earlier period continued but black slipped ware also made appearance. The pottery types in black slipped included vases, *handis,* storage jars, *lota* shaped bowls, lipped bowls, basins etc.

The important antiquities of iron included arrowheads, spearheads, chisels, nails and the objects of stone were beads, blades, sharpeners and balls. Bone implements were arrowheads, bangles, points, amulet etc. Amongst terracotta objects mention may be made of beads, animal figurines, earlobes and balls.

Period IV was marked by the appearance of the N.B.P. Ware. However, black-and-red ware still continued but in less frequency. Many new types in red ware and black ware made their appearance in this period. Specimens of both plain and slipped red ware were also met with. The types included vases of out-curved thickened rim and out-curved beaded rim, dishes with sharp carination at the waist, bowl with everted rim, bowl with horizontally splayed out rim, basin with beaded rim, lipped basin, lid-cum-bowls, flat based bowl, trough etc.

The important finds of stone were beads, balls, weights, celts etc. The bone objects were arrowheads, bangles, points etc. The objects of terracotta were beads, earlobes, animal figurines, human figurines, gamesmen, balls, dice, locket, toycarts, amulets etc. Amongst iron objects, mention may be made of nails, arrow-heads, spearheads, razors, chisels, rings, sickles and bangles. The antiquities of copper included beads, cast coins, antimony rods, rings and bangles.

Period V was represented by the red ware industry belonging to the Kushana period. The ceramic types included *surahi,* frying pan with handle, vase, flat based bowl, sprinkler etc.

Among the noteworthy antiquities, mention may be made of beads of stone, glass and terracotta; bangles of copper and glass; a terracotta human head and animal figurine; iron nail, sickles, arrowheads, spearheads, razors etc.

Period VI was marked by the appearance of Gupta and late Gupta antiquities along with the structural remains of burnt bricks. Antiquities included stone beads, votive stupas, images of Buddha, and *chhatravalis.* The terracotta finds included beads, earlobes, seals and sealings. Among the objects of iron, mention may be made of nails, arrowheads, spearheads and rings while the copper objects were represented by earrings, fingerrings and bangles.

Period VII was distinguished by the deposit associated with the antiquities of Pala period. The burnt brick structural remains of a monastery along with the bases of stone pillars and the ruins of a verandah and three rooms were also exposed. A few burnt brick votive stupas were also met with. The important finds of the period were represented by seals, sealings, images of Buddha, Avalokitesvara and Tara.

Besides this one thousand and ninety-nine silver coins, each being of the value of a rupee, were also found beneath the remains of a modern floor. Among these one thousand seventy-one were issued by Queen Victoria, eleven by William IV and seventeen by Edward VII.

12. EXPLORATION AT DUMDUMA, DISTRICT HAZARIBAGH.— Hari Manjhi, assisted by Sunil Kumar, Saptrishi Kumar and T.K. Srivastava of Patna Circle of the Survey undertook exploration of Dumduma, 4km south-east of Nawadah on the bank of the river Sakri.

Remains of stone temples, a good number of Brahmanical sculptures and architectural fragments of different periods ranging from *circa* eighth to fifteenth century were noticed. An inscription of 'devpala' and 'surpala' (AD 812-850) in Kutila characters was also noticed on a square stone slab.

Besides, a number of architectural fragments including *chaitya* - arches were also noticed. The exterior wall of the present temple was found to have been decorated with sculptures of an earlier tradition like Uma-Maheswar, seated Surya, standing Vishnu, Simhavahini Durga, Surya on a chariot drawn by seven galloping horses and *Siva-lingas.* Another modern temple known as Chhoti Shivala facing north was also erected over the ruins of another ancient temple about 50m east of the Badi Shiwala. A number of loose sculptures in black stone were found. These included the figure of Durga, Simahavahini, Vishnu, Vyala figure etc.

The entire area also yielded brick remains, the commonly bricks used were of 42 X 28 X 7cm; 42 X 26 X 7cm; 39 x 26 x6 cm and 27 x 17 x 5cm sizes.

13. EXCAVATION AT PAISRA, DISTRICT MONGHYR.— In continuation of the earlier work *(1983-84,* pp.13-14), P.C. Pant and Vidula Jayaswal of Department of Ancient Indian History, Benaras Hindu University resumed excavation at the Acheulian settlement at Paisra. During this season not only a few trenches were dug at the localities D & E, where significant evidence for Acheulian floors were found earlier, but two new localities were selected for intensive investigation. They were named as localities F & D. Among the important finds of this season, mention may be made of, first, several stone alignments of the Acheulians, which can perhaps be interpreted as a conclusive evidence for actual habitation, and secondly, discovery of an

extensive Mesolithic floor, so far unknown from Paisra and its neighbourhood.

Two more trenches of the dimension of 5 X 4m and 3 X 3m were excavated in the locality D. As observed earlier this season's excavation in this locality also proved that it was the workshop area of the Acheulian inhabitants where they also constructed small temporary thatched shelters. The entire habitational floor revealed by the diggings was found littered with finished and semi-finished implements including a few handaxes and cleavers, cores, flakes, associated with innumerable chips and blocks of quartzite, some of which were presumably meant as raw material for tools and also as anvils. Besides, one more post-hole, similar to the ones found in this locality in earlier excavations, was also encountered in the larger trench.

The trenches measuring 6 x 4m each were taken for excavation in the locality E, just south of the trench 2 unearthed during the earlier season. The stratigraphy in these trenches is exactly similar to that observed in the earlier trench. The Acheulian floor was encountered at the depth of about 3.5m, but the tools lay on the upper crust of 7 to 25cm thick layer of tiny haematite pallets and not directly on the bedrock. In one of the trenches were found a few straight and somewhat curved stone alignments along with two post-holes. The locality generally proved poor in artifact content.

About 70metre south of the locality E is located another large upland across a wide gully formed by surface erosion. This was marked as locality F, where an extensive trench of 25x5m was planned in the northern fringes of this upland. The excavation revealed that at a depth of 65 to 90cm, occurred a very thin layer of Mesolithic habitation. The entire area of 105 square metres was found exceptionally rich in Mesolithic debitage occurring on the floor in clusters. Besides these clusters, the floor is also characterized by the occurrence of a number of big and small fire places. Some of the artifact clusters were found close to the fire places. The entire evidence suggests that the locality represents a workshop area of the Mesolithic inhabitants and that the raw material of fine grained quartzite was frequently heated in the process of manufacturing the implements. In one of the fire places there were several lumps of burnt earth, presumably meant for roasting meat. A large fire pit measuring 108 x 85 cm and about 20 cm deep, was also unearthed on the floor. Besides substantial amount of charcoal, it also yielded some very decomposed animal bones along with two tiny charred pieces. The evidence suggests that the inhabitants roasted meat before consumption. A radiocarbon date of the charcoal sample from this pit has been made available by the Birbal Sahni Institute, Lucknow. It is 7420 ± 110 BP (BS-675).

The Acheulian level was reached in the locality F at a depth of about 2.40 to 2.55m. Not many artefacts were found in the excavation of this locality. As observed in other areas, they rest on the upper crust of a thick layer of very compact tiny haematite pallets. Among the artefacts mention may be made of one massive cleaver.

About 300m north of the locality E and about 400m west of the Paisra village was located a vast and somewhat raised area which was laid bare by repeated denudations and named as locality G. This raised ground has preserved a large number of straight and curved stone alignments on the surface of the thick deposit of haematite pallets. A limited number of Acheulian artefacts were also found in association with these stone formations. A trench measuring 8x5m was planned in the neighbourhood in a fairly uneroded area with a view to

ascertaining whether similar stone alignments as found on the near-by exposed surface also existed in the undisturbed parts of this locality. It was heartening to note that the excavation substantiated our observation. The habitational floor of the trench not only preserved some semi-circular and straight stone alignments, but also a couple of post-holes. The entire evidence suggests that a sizable proportion of the Acheulian population lived in this locality and also constructed some primitive shelters for the purpose. The habitational floor of this trench proved particularly rich in all types of stone artefacts including two handaxes.

14. EXCAVATION AT MANER, DISTRICT PATNA.— In continuation of last season's work *(1984-85,* pp. 11-12), the Department of Ancient Indian History and Archaeology, Patna University, resumed the excavation at Maner, about 35km west of Patna. The work was directed jointly by B. Narayan and A.K. Singh under the over-all supervision of B. Sahai, with the assistance received amongst others from J.P. Singh, R.N. Singh and P.K. Bose.

The main objectives of this year's operation were to ascertain further the pre-N.B.P. chal-colithic level and to find out whether the brick-built walls of the Pala period showing plan of two rooms, as noted in the last season's excavation extended further towards the northern side. Keeping in view the second objective, an extension trench measuring 6 x 4m was taken towards the northern side and besides, the undug portion below the Pala level in the southern side of the trench was taken up for further digging. The site revealed three cultural periods as noted in the last season's work.

Period I was represented by a 60cm thick cultural deposit of chalcolithic vintage resting over the natural soil. The pottery of the period was black-and-red ware, black ware and red ware. The main types included vase, stems of dish-on-stand in black-and-red ware, ring based bowl, dish with incurved or straight sided rim, miniature vase and small to medium sized jars. The antiquities comprised of objects like fragments of bone points, terracotta beads, stone beads and some microlithic cores.

Period II belonged to the N.B.P. phase which was marked by the advent of iron objects. The whole of the N.B.P. deposit was divisible into four or five layers ranging from layers (6) to (3) and the total thickness of the deposit was around 3.75m. But its lowermost levels, especially represented by layers (6) and (5), yielded fine varieties of N.B.P. sherds with thin section in varying shades such as silvery, golden, steel blue, violet, black etc. The main types in the N.B.P. ware included bowls, dishes and some basins. The most noteworthy among the bowls were those with everted rim as well as those with horizontally splayed out rim. The dish with sharp carination at the waist was also noted. The basin type was generally characterised by a beaded rim. The associated wares of N.B.P. were represented mainly by the black slipped ware, grey ware, black-and-red ware and red ware. The black slipped and grey ware sherds were found in greater frequency in relation to the other wares. The antiquities from these two layers comprised of terracotta animal figurines, beads and dabber, iron implements and stone beads.

The upper layers of the N.B.P. deposit yielded coarser variety of N.B.P. sherds along with some finer specimens. The coarser sherds show a tendency towards thickness and the same characteristic was noticed in the sherds of other associated wares such as the black-slipped

ware and grey ware. The grey ware sherds, however, were represented by fewer specimens. A brick-built wall consisting of eight courses of bricks was found associated with the 'upper layers. The wall in question rests over layer (5) and it is sealed by layer (3). The antiquities obtained from these upper layers comprised of iron objects like spearhead, chisel, knife, nail, terracotta objects like female and animal figurines with punched designs, ram and gamesmen, and copper objects.

Period III was marked by structural complex belonging to the Pala period. This year's operation in the extension trench brought to light the plan of a room measuring 4.08 x 2.19m and this in turn was found connected with the plan of two rooms discovered during the last season's excavation. The floor of the room was plastered with *surkhi* and lime and this was particularly evidenced by the patches of plastered portion that was found along the brick walls running from north to south.

A curious feature of one of the walls was that it contained a semicircular niche whose diameter was 1.08m. The above structure was sealed by layer (2) and yielded, in addition to a gold ring and silver ear ornament, a number of terracotta beads, stone beads, terracotta animal figurines, bone points, copper antimony rods etc.(pl. V A). The topmost layer yielded mixed material of different kinds including green glazed sherds of early medieval period.

15. EXPLORATION IN DISTRICT ROHTAS.— Birendra Pratap Singh, assisted by L. Misra, J.R. Singh, S.K. Sharma, N.K. Singh and M.M. Singh of the Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University undertook exploration of the district. The explored sites with their associated cultural assemblage are mentioned below:

Village I Site	*Cultural assemblage*
Admapur	Sunga-Kushan pottery, a copper coin, black-and-red, black slipped, N.B.P., grey and red wares, iron slag, mullers, pestles, saddle quern, lump of chalcedony with crested ridge and waste chips of chalcedony and chert
Akorhi	Neolithic-Chalcolithic black-and-red ware, coarse red ware, black slipped ware, cord impressed pottery, N.B.P.W. associated wares, polished celts, stone rubbers, pestles, hammer stones (?), ring stones, fluted core, parallel sided blades, waste chips, terracotta animal figurines, discs and pottery discs
Badalgarh	Sunga-Kushan pottery, black slipped and black-and-red ware neolithic celt, stone disc, parallel sided blades, waste chips and copper coin
Basani	Sunga-Kushan pottery
Basnara (Badalgarh)	Chert bladelet core, notched flake, end scraper, blade, waste chips, Sunga-Kushan pottery and Muslim Glazed ware

Village I Site	*Cultural assemblage*
Bhairodih	Late phase of N.B.P.- coarse black slipped ware (coarse variety), coarse grey ware, N.B.P.W. and red ware and Kushan pottery
Bhartar	Fluted core, microliths, Sunga-Kushan pottery, terracotta ball.
Bhisara	Late phase of N.B.P. - red ware, black slipped ware, black-and-red ware, core and waste chips of chalcedony
Birnagar	Sunga-Kushan pottery and Muslim glazed ware
Cherahat	Sunga-kushan pottery
Churmuliadih	Late phase of N.B.P. and Kushan pottery, iron slag and a bird figurine of terracotta
Daindih	Neolithic-Chalcolithic-black-and-red ware, coarse red ware, black slipped ware, cord impressed pottery, N.B.P. and other associated wares, polished celts, stone rubbers, pestles, hammer stones (?), ring stones, fluted core, parallel sided blades, waste chips, terracotta animal figurines and pottery discs
Digghi	Late phase of N.B.P.- red ware, black slipped ware, black-and-red ware, core and waste chips of chalcedony
Diha	Late phase of N.B.P.- coarse black slipped were (coarse variety), coarse grey ware, N.B.P.W. and red ware and Kushan pottery
Dilla	Sunga-Kushan pottery and fluted core of chert and waste chips
Gorasara	Late phase of N.B.P.- red ware, grey ware, black slipped ware and terracotta ball.
Itasvagarh	Early and late phase of N.B.P.- red ware, fine grey ware, black slipped and black-and-red ware, stone pestles, muller, hammer (?), polisher, sharpener, fluted core, waste chips and iron slags
Karnapura	Early and late phase of N.B.P.- black-and-red ware, black slipped ware, red ware and *naga* figure
Kushuridih	Chalcolithic black-and-red ware, black slipped ware, red ware, corded ware, N.B.P. in black, golden and silver shades and fluted core of chalcedony, waste stone chips of chert and chalcedony
Madhuri	Early and late phase of N.B.P.- black-and-red, black slipped, N.B.P, grey Kushana bowls, sprinklers, iron slags, mullers, pestles, saddle-quern, lump of chalcedony with crested ridge and waste chips of chalcedony and chert
Majhiaon	Early and late phase of N.B.P.- and black-and-red ware, black slipped ware, grey ware and red ware, terracotta animal figurine, human figurine, dabber, pendant, fluted core of chert and chalcedony, stone muller and Muslim glazed ware

Village I Site	*Cultural assemblage*
Malaon	Three polished celts of basalt of different sizes, hammer-stone (?) and a ring stone were picked up from the village where they were worshipped
Malon-II	Core of chert, waste chips, terracotta human figurine
Malhar	Sunga-Kushan pottery
Malhipur	Early and late phase of N.B.P.-black slipped ware, black-and-red ware, red ware, pottery-disc, terracotta stopper, iron slag, stone ball, hammer, bowl, and waste stone chips of green and black chert
Malhipur (Barki)	Sunga-Kushan pottery, stone pestle, and animal figurine
Masahi	Upper Palaeolithic tools (?)
Naraina	Sunga-Kushan pottery and animal figurine
Patanawa	Sunga-Kushan pottery, iron slag, black slipped ware, grey ware (solitary piece), red ware, stone ball, terracotta stopper, parallel sided blade and waste stone chips
Rajakiankori	Chalcolithic-black-and-red ware, red ware, black slipped ware, grey ware (solitary piece), red ware, stone ball, terracotta stopper, parallel sided blades and waste stone chips
Sakas	Neolithic black-and-red ware plain as well as painted, burnished pale red ware, coarse red ware, red ware with bright red slip and black burnished ware. Noteworthy shapes are bowls with rounded base, perforated footed bowl, vases with flared out him, channelled spouted bowl, lipped bowl, basin etc. Other finds are polished celt, bladelets, retouched blade of chalcedony, parallel sided blades, fluted cores of chalcedony and waste chips etc.
Senuar	Neolithic-Chalcolithic - black-and-red ware, black burnished ware including painted variety, black slipped ware, cord impressed pottery, red ware, N.B.P., sprinkler, neolithic celt, parallel sided blade, fluted cores and waste chips of chalcedony, chert, hammer stone (?), terracotta dice, gamesman, crucible, flesh rubber and arecanut bead
Sonvagarh	Sunga-Kushan pottery, parallel sided blade, waste chips and stone ball
Telari	Late phase of N.B.P.- black slipped ware, coarse grey ware, red ware, N.B.P. in black shade, terracotta dabber, human figu-rine, arecanut and cylindrical beads, stone balls and pestles.
Tori	Late phase of N.B.P.- black-and-red red ware, course grey ware and red ware

CHANDIGARH

16. EXCAVATION AT CHANDIGARH.— During the course of digging the foundation of a building by the contractors of the Punjab State Industrial Development Corporation in Sector 17-C which is in the heart of the city, a few Harappan potsherds were picked up. Keeping in view their archaeological importance a trial trench measuring 2.50 X 2.50m was taken up under the direction of D.P. Rai, assisted by J.M. Thapar, Jasmer Singh and Vinod Kumar of the Chandigarh Circle of the Survey to ascertain the cultural deposit of the site. The total cultural deposit was 1.15m. The site revealed single culture *i.e.* Harappan occupation. On the basis of pottery it was further divided into two sub-periods as Period IA and Period IB.

In Period IA, lm thick deposit of the Harappan Culture was noticed. The pottery types were jars, dish-on-stand and button based goblet. Most of the sherds of this sub period were badly weathered due to water logging. Besides these, few pieces of storage jars, vases and bowls were also found. Except for the evidences of two hearths and lumps of burnt clay no other structures were encountered. Among the antiquities mention may be made of a solitary bead of faience, terracotta objects like broken bull hopscotch, stone ball and quern.

The Period IB was marked by 0.15m deposit. It was badly disturbed. It was marked by Bara pottery which included mainly incised designs such as parallel lines, horizontal lines, vertical lines, nail marks, notched and incised mat design. Neither structural activities nor other antiquities were found from this level.

GUJARAT

17. EXPLORATION IN DISTRICT KUTCH.— R.S. Bisht of Excavation Branch (V) of the Survey, assisted by B.R. Meena, L.S. Rao, Y.S. Rawat and R. Kumar, explored in the talukas of Bhachau and Rapar and brought to light forty-nine archaeological sites. Of them, five sites, viz. Kanmer, Bhachau, Chhadwala, Vondh and Varnu Wandh, yielded protohistoric materials (figs.l and 2).

The sites at Kanmer (pl.V B) and Bhachau locally known as Bakarkot and Sevakiya respectively, have yielded mature Harappan elements together with other associated non-Har-appan wares. At Kanmer, the principal part of the mound (100 X 100m along cardinal directions; height 6m), showed evidence of fortification with openings probably for gateways. The site at Bhachau (about 70 X 70m in area; with a deposit over 3m), appears to be another fortified settlement. The sites at Vondh and Chhadwala, known as Gameri and Vaidwala Mohra respectively, are small low mounds yielding late Harappan materials while mature elements, on present showing, are conspicuous by their absence. The Khandariya mound at Varnu Wandh appears to be a small protohistoric hamlet which was reoccupied during late medieval period. As such, the earlier material which consists of pottery, microliths and waste flakes of chalcedony is normally found on narrow margins of the mound. In addition, a few large underground kilns were also noticed. Possibly, the site could be a hamlet of miners engaged in collecting and extracting chalcedonic raw materials from the famous agate fields of Mardakh Bet which lies 10km away in the Little Rann.

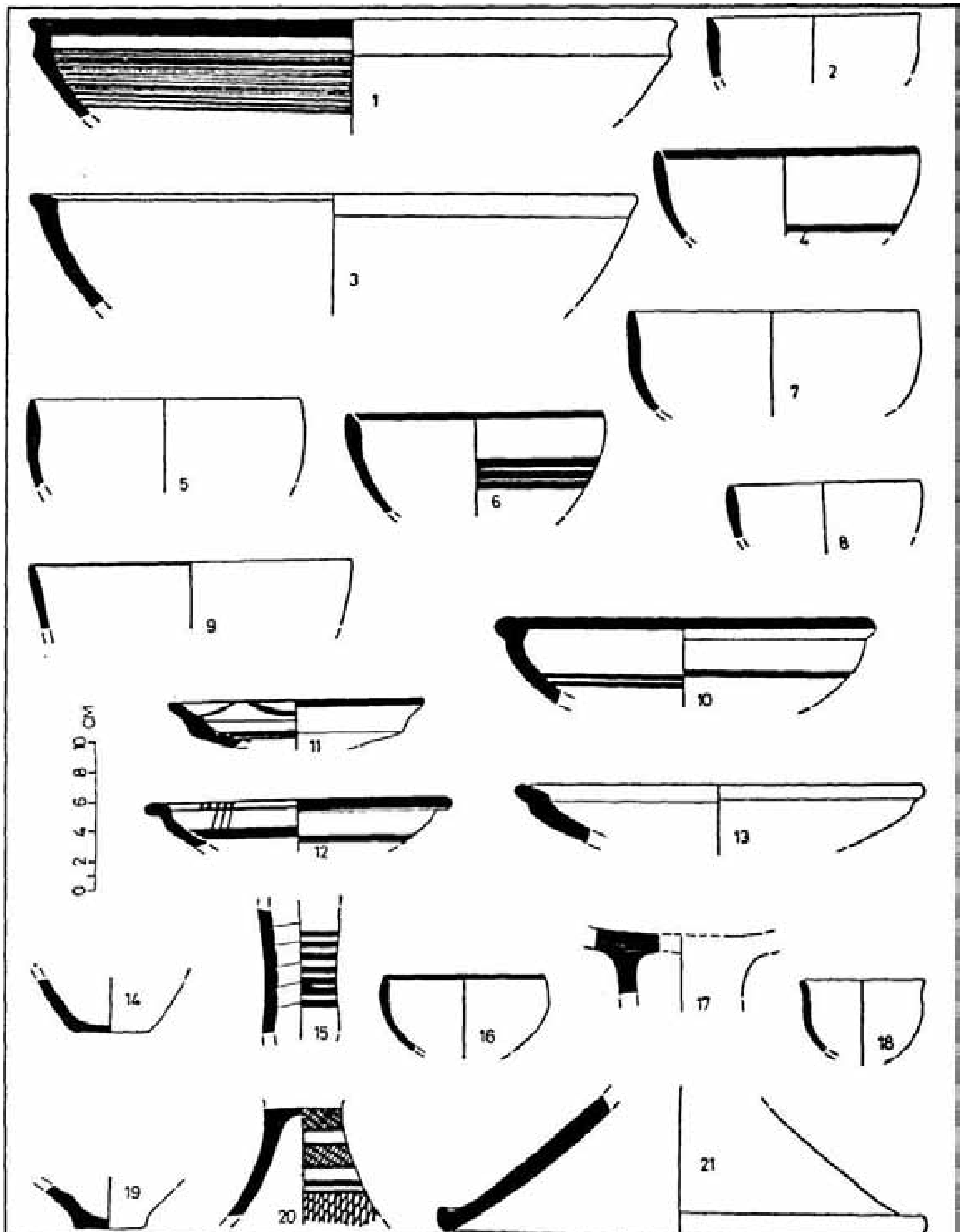


FIG. **1.** *Pottery types: 3,7,10-11,13, 16-19 and 20-21, Bhachau; 5 and 8, Chhadawala; 1,4 6, 12,* ***15 and*** *20, Kanmer; 2,9 and Varnu Wandh.*

All the sites, together with the known site of Shikarpur, lie along the shoreline of the Little Rann or the Gulf.

The other explored sites are as under:

Taluk	*Locality*	*Site*	*Cultural assemblage*
Bhachau	Adhoi	Gopalwadi	Medieval
-do-	Amliyara-1	Padroda	Medieval
-do-	Amliyara-2	Pathav	Medieval and memorial stones
-do-	Bandhadi	Gameriwali Mohra	Medieval
-do-	Bhachau-1	Gameri	Medieval
-do-	Bhachau-2	Sevakiya	Harappan
-do-	Chanper	Chanper-ka-Vasan	Medieval
-do-	Chhadwala	Vaidwali Mohra	Late Harappan
-do-	Dedarwa	Lakhiasarwali Dhar	Medieval
-do-	Dholavira-2	Jhandiyasar	Medieval
-do-	Dholavira-3	Jhangwala Khandahar	Medieval
-do-	Dholavira-4	Loharua	Medieval
-do-	Jangi-1	Jangi	Memorial stones
-do-	Jangi-2	Saran	Medieval
-do-	Jatwada-1	Gagotar	Medieval
-do-	Jatwada-2	Lolawadi	Medieval
-do-	Jatwada-3	Sukhar	Medieval
-do-	Kalyanpur-1	Jagapadar	Medieval
-do-	Kalyanpur-2	Pabuwali Mohra	Medieval
-do-	Karmaria	Gebalsawali Pirwari Khetar	Medieval
-do-	Kharoda-1	Dhori Dhappar	Medieval
-do-	Kharoda-2	Mianwali.Basti	Medieval
-do-	Kharoda-3	Wadiya	Medieval and memorial stones
-do-	Lakhavat	Lakhavat	Medieval
-do-	Laliana	Mataji no Mohra	Medieval
-do-	Rajthali	Rajthali	Medieval
-do-	Rathanpur-1	Khengarha	Medieval
-do-	Rathanpur-2	Metia Dhar	Medieval
-do-	Vondh	Gameri	Late Harappan and medieval
-do-	Wandhia	Wandhia	Medieval, memorial stone and step well

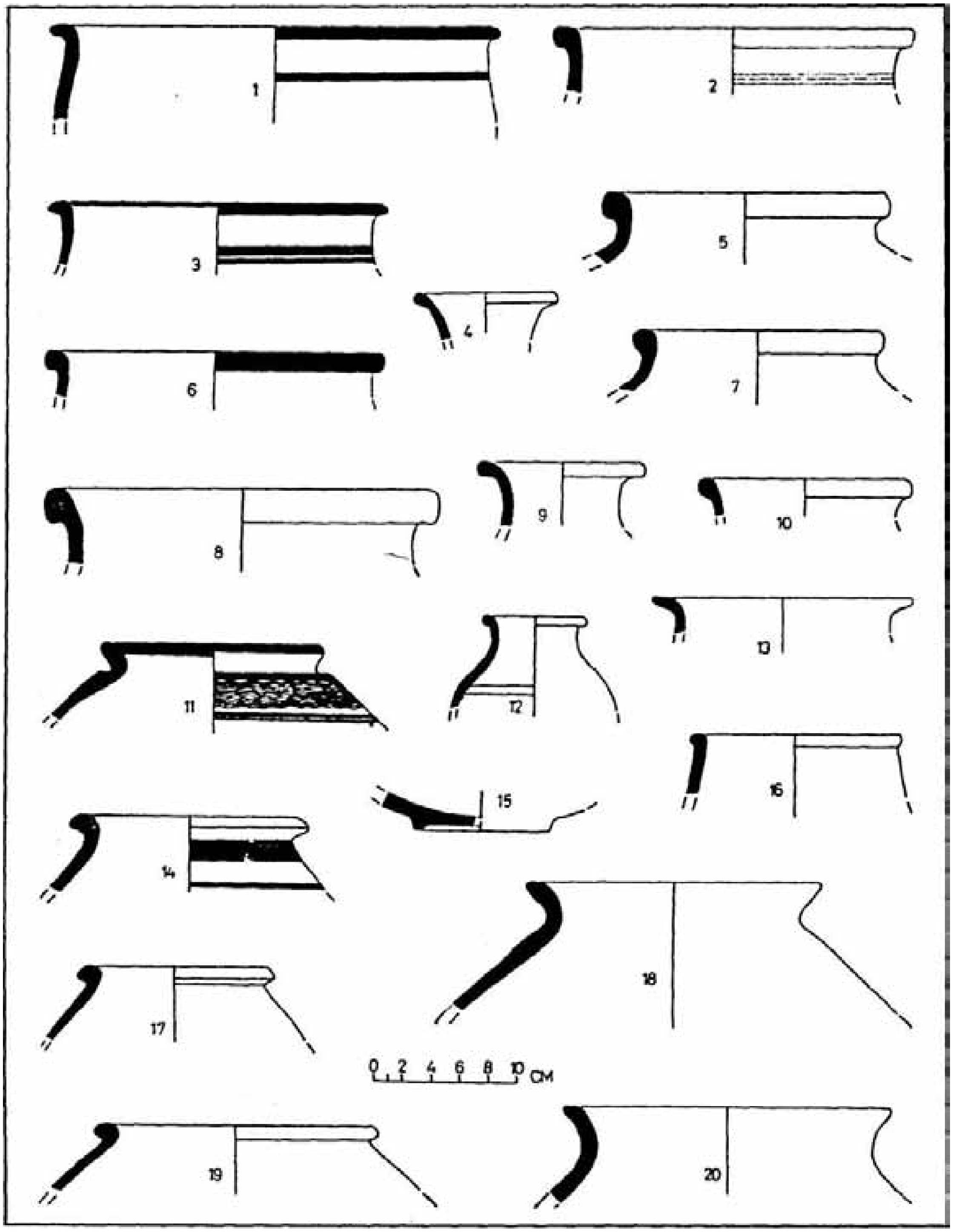


FIG. 2. Pottery *types: 5,7,12,15 and 17-20 Bhachau; 13 and 16, Chhadawala; 3,6,8,11 and 14, Kanmer; 1,2,4,9 and 10, Varnu Wandh.*

Taluk	*Locality*	*Site*	*Cultural assemblage*
Rapar	Amrapar	Amrapar	Medieval
-do-	Bhimdevka	Bhimdevka	Medieval and memorial stones
-do-	Chitrod	Khatlawali Tekri	Medieval
-do-	Dabhunda	Juna Dabhunda	Medieval
-do-	Kanmer-2	Bakarkot	Harappan medieval and memorial stones
-do-	Kanmer-3	Ban	Medieval and memorial stones
-do-	Makhel	Makhel	Medieval, memorial stones and temple
-do-	Mangarh	Mangarh	Medieval
-do-	Mewasa	Mewasa	Medieval
-do-	Padampur-1	Dhoridhar	Medieval
-do-	Padampur-2	Metia Hanuman	Medieval
-do-	Palanpar-1	Naradeshwar	Medieval
-do-	Palanpar-2	Pariawari Khetar	Memorial stones
-do-	Palaswa	Wandh	Medieval
-do-	Rapar	Padroda	Medieval
-do-	Saran Wandh	Gadda	Medieval
-do-	Trambau-1	Trambau	Late medieval and memorial stones
-do-	Trambau-2	Veerbhadra	Medieval
-do-	Varnu Wandh	Khandariya	Protohistoric and late medieval

18. EXPLORATION OF KOTADA AT DHOLAVIRA, DISTRICT KUTCH.— R.S. Bisht and B.R. Meena of the Excavation Branch (V) of the Survey, during the course of inspection collected a spearhead, a twisted piece of a sheet and cube, all made of copper, from the surface of the Harappan mound of Kotada at Dholavira in Bhachau taluk. The copper cube weighs 25.45gm and measures 2.0 X 1.4 X 1. lcm.

19. EXCAVATION AT ROJDI, DISTRICT RAJKOT.— In continuation of last years' work *(1984-85,* p. 18), the Department of Archeology, Government of Gujarat and American Institute of Indian Studies, U.S.A., jointly excavated the Harappan site of Rojdi. The mound is divided into ten parts.

In a 3m thick deposit three phases of Harappan period were encountered. The earliest inhabitants settled over the platform and constructed a building of undressed stone. The foundation of the building brought up in next phase was that of a big house. The last phase with late Harappans revealed beads, wheels, fragments of the shell bangles and two heavy copper axes. The Harappan economy depended on the use of cattle, sheep, goat and fish as their food.

20. EXPLORATION IN DISTRICT SURAT.— Vilas Jadhav of the Survey, in the course of exploration, discovered the following sites of archaeological interest:

Taluk	*Village I Site*	*Cultural assemblage*
Songad	Bhimpura	Late medieval sculpture of Ganesa Medieval
-do-	Songad	site, ruined temple, fort, palace, step-well, sculpture, cannon, and tank Head of Vishnu
-do--	Statkasi	Medieval site
do-	Ukai	

21. EXCAVATION AT NAGWADA, DISTRICT SURENDRANAGAR.— K.T.M. Hegde assisted by V.H.Sonawane, K.K. Bhan, K. Krishnan, Ajit Prasad and S. Pratapa Chandran of the Department of Archaeology and Ancient History, M.S.University of Baroda, carried out an excavation at Nagwada, in Dasada taluk. The site at Nagwada is one of the twenty-four Chalcolithic sites with Harappan affiliation discovered in the estuary of the Rupen river *(1978-79,* pp.6-7, *1982-83,* p. 28, *1984-85,* p.19). It is located about 3km south of the Nagwada village, on the crest of a relict sand dune formed close to the north bank of an ephemeral stream locally known as the Vankali. Close to this site there are two more mounds yielding Harappan relics. All three are located on the top of dunes close to inter-dunal depressions where monsoon run-off accumulates. Since the sub-soil water in this area is brackish these ponds may have served as the sources of potable water to the Chalcolithic community just as similar ponds do to the present day villagers.

Since most of the other Chalcolithic sites in the Rupen estuary had yielded a limited number of Harappan relics often in association with the lustrous red ware, the excavation was taken up to know the date of immigration of the Harappan community of the mature phase into the mainland of Gujarat, its distinctive cultural equipments and the nature and the economic role of the ornamental stone bead and shell bangle manufacturing industries found at Nagwada. Therefore, the mound measuring 140 X 110m was put under a 10 X 10m grid, soil samples obtained from a depth of 10-15cm from each grid square was tested for their phosphate content and, based on these results four 5 X 5m trenches were cut. The thickness of the habitation deposit in these cuttings varied from 0.91 to 1.04m with five distinct layers which incorporated four structural phases of a single culture.

Post-holes that went down into the natural soil in the fifth layer marked the first phase of the structural activity at the site. In the second phase rectangular structures built of undressed stone were observed. In the third phase there were rectangular structures built of moulded mud-bricks measuring 32 x 16 x 8cm. The brick masonry consisted of alternate layers of headers and stretchers. In the fourth phase rectangular structures built of rubble stone once again came into use. Buried underneath the mud-brick structure was a miniature pot containing a rolled sheet of corroded copper and a number of ornamental steatite and well-polished

beautiful agate and amazonite beads. A miniature pot containing fragments of corroded copper was also found buried underneath the floor of the first rubble structure.

All five layers yielded painted and plain sturdy red ware, buff ware and sherds of perforated ware. Among the forms encountered were dish-on-stand, some of them with the mature Harappan characteristic having concentric incised designs, stud-handled bowls, bowls without handle, basins, dishes, lids and large and medium-sized storage jars (figs. 3 and 4).

Besides, sherds of white painted black and red ware, coarse grey ware with and without incised decorations and chocolate slipped ware were also encountered. But there were no sherds of the lustrous red ware. The other antiquities recovered in the excavation included a large copper celt weighing 647gms with a slightly flaring cutting edge, a copper parer, large number of ornamental stone beads together with their manufacturing waste, drill bits, long parallel sided flint blades, finished and unfinished shell bangles, a terracotta toy cart frame with wheels, moulded terracotta triangular cakes, a variety of terracotta lamps, querns, stone, pestle and sling balls. One of the trenches appears to have been cut into a grave. It has yielded six intact vessels, two of them jars, one dish-on-stand, two beakers and one bowl.

A preliminary study of the bone pieces recovered in the excavation has indicated that the Harappan community at Nagwada had domesticated camel, cattle, buffalo, goat, sheep and pig, and that they had also hunted wild animals like sambar, boar and chital for food. Radiocarbon date of the charcoal sample recovered from layer (5) has given the date of 3810 + 80 B.P. Four more stratified charred bone samples recovered at Nagwada are being examined by the particle accelerator at the University of Arizona.

22. EXCAVATION AT GORAJ (MAHADEOPURA) DISTRICT VADODARA.— In continuation of the last year's work *(1984-85,* pp. 19-20), R.D. Singh assisted by Anand Shastri, Narayan Vyas, Vikas Chandra Sharma, Vilas Jadhav, N.A. Saiyed and N.B. Soni of the Vadodara Circle of the Survey resumed excavation at Goraj with a view to further exposing the remaining part of the brick plinth, the enclosure and other structures partly unearthed earlier.

The excavation brought to light a damaged brick plinth of a temple and the extension of the enclosure. The entire plinth up to its foundation level was exposed. Another structure or platform adjoining the plinth was almost coeval with it.

The extension of the enclosure in the north, north-east and west sides of the mound was seen to be much washed off save for its two brick courses. Interestingly it was seen that there was a passage from the riverside as seen in the two dressed stones *in situ* having post holes. To the west of the plinth and within the compound, traces of brickbat flooring was exposed. In the south-east side of the plinth, another part of the compound was also exposed having nine brick courses.

The constructional activity seems to have continued even in the later periods as seen by a brick and stone squarish platform (pl.VI).

Besides red, micaceous red and red polished ware, arrowhead, terracotta head, miniature sculptures of Vishnu, Ganesa, and iron nails in plenty were found. A different form of brick mouldings, though few, were also collected from the debris. During the excavation a few small

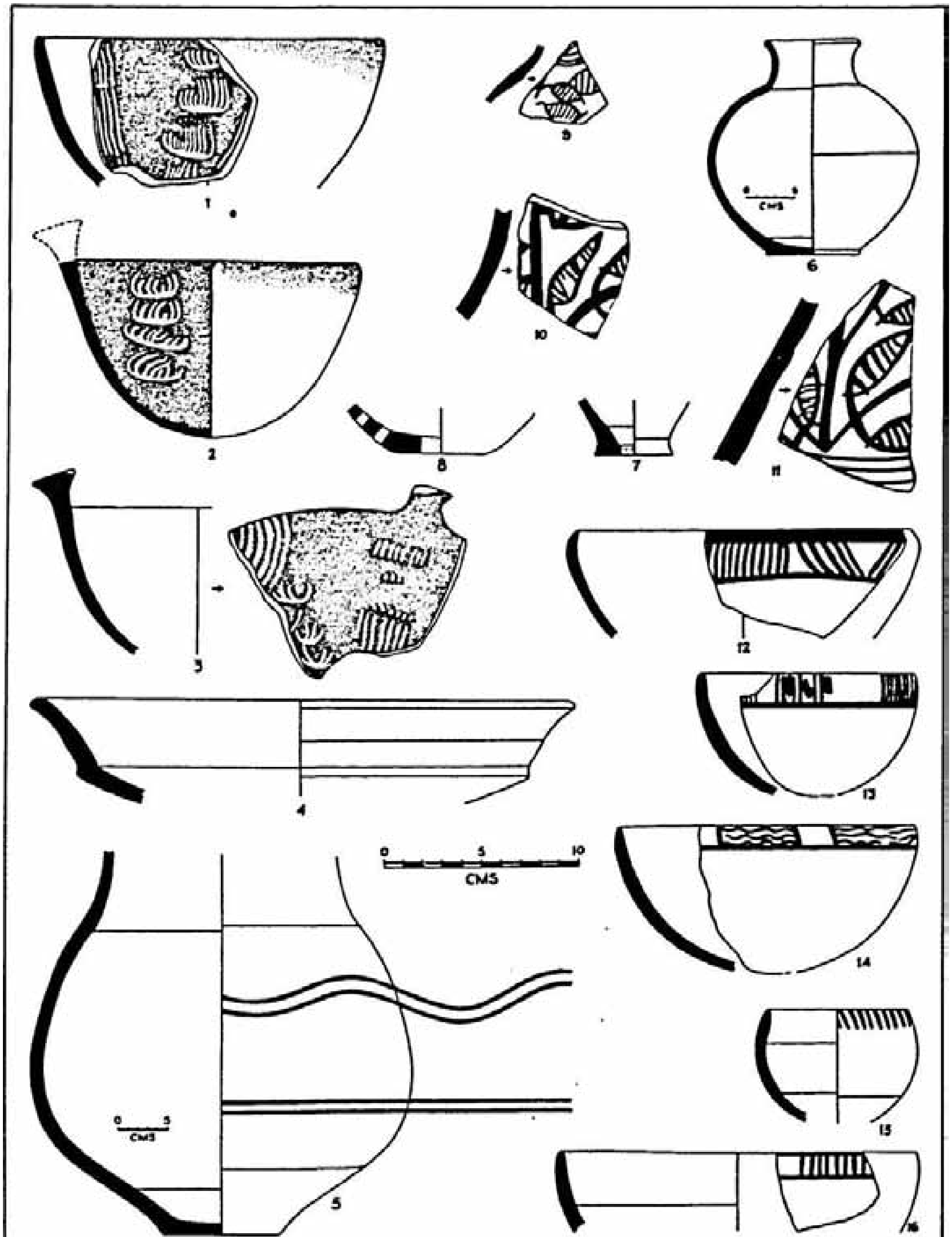


FIG. 3: J-3W7iite *Painted Black & Red Ware, 4-12 Sturdy Red Ware, 13 & 15 Coarse Red Ware, 14 & 16 Chocolate Slipped Ware.*

silver coins of Kumargupta in Kshatrapa pattern were found near the upper part of mouldings. A unique find was a miniature head of three eyed Siva in schist of second-third century AD with the headdress typical of its age.

HARYANA

23. EXCAVATION AT KUNAL, DISTRICT HISSAR.— J.S. Khatri and Madhava Acharya, assisted by S.K. Arora, R.S. Dahiya, Roshan Lai and Kali Ram Saini of the Department of Archaeology and Museums, Government of Haryana, carried out the excavation at Kunal about 80km from Hissar with a view to determine the stratigraphic position of Painted Grey Ware & Bara cultures in the context of the Pre-Harappan and Harapan cultures. The nucleus of the mound covers an approximate area of 600 sqm and shows the height of about 4 metres from the surrounding area. A considerable part of the mound from the west and the north has been badly damaged by the cultivators.

The mound lies on the left bank of a storm water drain locally called variously as Rangoi, the Nali or the Hakraban which used to get flooded during the rainy season. This most probably represents the old course of the 'Lost Saraswati' which runs in a natural depression starting from Pehowa and passes through Guhla-Chika, Kaithal, Jakhal, Ratia, Rupanwali, Chimu, Kunal, Shahzadpur, Aharwan, Birrana, Fatehabad, Karian, Banawali and goes further to the west via village Sadarali and ultimately joins the Ghaggar near Sirsa.

Only three trial trenches were laid which revealed the following cultural sequence:

Period I: The lowermost occupational deposit comprises of distinct elements of early Chalcolithic culture known as Pre-Harappan culture. The pottery was handmade as well as wheel-made of light and thin fabric, red to pinkish in colour and painted in black combined at a time with white over a self-slipped dull surface. The main characteristic of this ware were black band paintings on the neck and geometrical designs on the shoulder. All the six known Pre-Harappan fabrics of Kalibangan were found. Apart from these, a new class of pottery was also found in the early level of this period. The pottery is completely different from the known Pre-Harappan fabrics, one is black and red ware and the other is buff red ware. The buff ware had biochrome paintings. It was a wheel-turned and occasionally handmade pottery with rough texture and finish. Pots were painted with tan or chocolate designs on the buff surface, consisting of multiple rows of horizontal and vertical lines. The designs were restricted to the geometric patterns. White pigment was also used. Types included *lota-shaped* jars of different sizes. The black and red ware, both hand made as well as wheel made, was also noticed. This type of pottery had no painting. The shapes in this ware were characterised by small jars with flaring rim and bowls with straight rim.

No structural remains have so far been encountered in the early level of this period, but subsequently remains of mud brick house in the middle level have been found. The bricks used were mostly of 11X 22 X 33 cm in the ratio of 1:2:3 by the Pre-Harappan but nothing can be said at present with certainty about the house planning of these people at the site due to

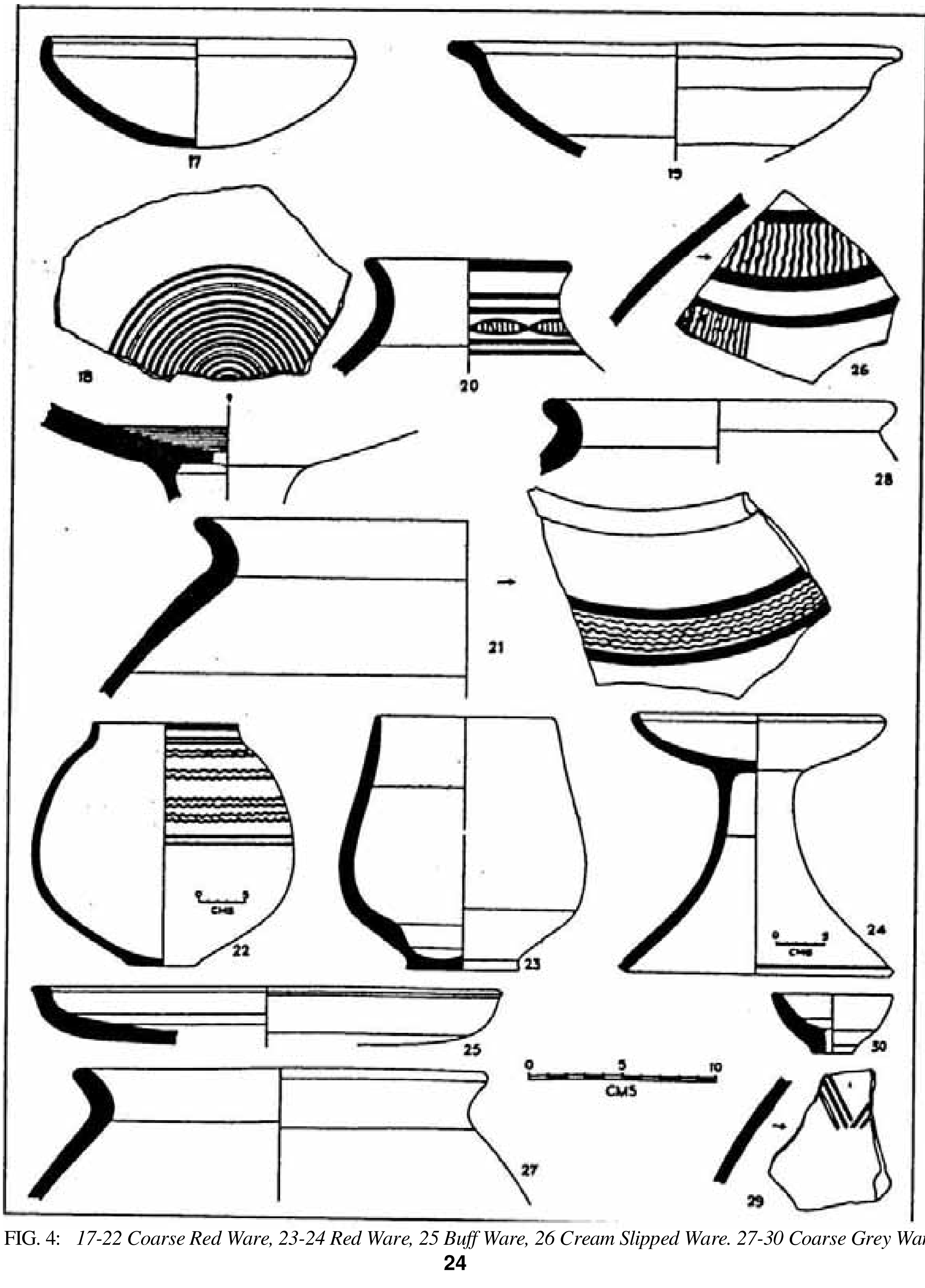


FIG. 4: *17-22 Coarse Red Ware, 23-24 Red Ware, 25 Buff Ware, 26 Cream Slipped Ware. 27-30 Coarse Grey Ware.*

limited operation. A few large pits, plastered with fine clay from inner side were also exposed. One of these pits was paved with mud bricks also. Probably these were made for storage of grain. A few small pits of same type were designed for disposal of animal remains. These were found with burnt animal bones, ash and charcoal. In one of the pits, bone was found covered with burnt mud which indicated the different ways of roasting to save the meat from fire. Apart from the regular antiquities like beads of steatite, carnelian, agate, lapis-lazuli and terracotta, and the bangles of shell, faience and terracotta, a beautiful seal of steatite was found. This seal bore a design in geometrical pattern. The other important finds included micro-blades of chalcedony and bone points, knife, razors, blades etc. The copper arrowheads, a chert blade, an anteller and grinding stones were also found. The lowest level contained the terracotta pallets used for grinding and pounding.

Period II: While Pre-Harappan people were still in existence, a new set of people occupied the site. This period was marked by the appearance of a new element known as 'Bara Culture'. The Pre-Harappan were slowly supplemented by the Bara people. The pottery of this culture is marked by a diversity in slip and painting. Some of the shapes were also new and the practice of decorating pots by horizontal, wavy, grooved lines was quite prominent. The shapes included dish-on-stand, dishes, storage jars, basins and cooking vessels. Among the other finds mention may be made of a chert blade, faience bangle and a ball, beads of steatite, carnelian, faience, terracotta, shell etc. and an arrowhead of copper. A few nodule shaped terracotta cakes were also found. Mud brick structures were also noticed in this period.

Period HI: In this period the pits were made by cutting through the structure of previous period. It seems that the new people did not occupy the main area of the previous habitation. The pottery included the simple red ware pots of medium fabric and were painted in black. The rims were always painted with straight lines or the arched lines. Cooking vessels were strictly painted with chessboard type criss-cross design on their body portions. Shapes were confined to the bowls with inturned rim of coarse fabric, carinated *handi* etc. Among the notable antiquities only an animal figurine of terracotta, two medieval copper coins and a few beads were found.

24. EXPLORATION IN DISTRICT HISSAR.— In the course of village-to-village survey conducted in tehsil Fatehabad and Hissar, Dhoop Singh and Chander Pal Singh, of the Department of Archaeology and Museums, Haryana, noticed the following sites of archaeological interest:

Tehsil	*Village/Site*	*Cultural assemblage*
Fatehabad	Aharwan	Medieval
-do-	Alisadar-I	Painted Grey ware, historical and medieval
-do-	Alisadar-II&III	Historical and medieval
-do-	Ayalki	Medieval
-do-	Bagalgarh	Medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Fatehabad	Bajalpur	Historical and medieval
-do-	Balbhumi	Medieval
-do-	Balbhumi	Medieval
-do-	Bangaon	Medieval
-do-	Banmandori	Historical and medieval
-do-	Banwali	Medieval
-do-	Barota	Medieval
-do-	Barsin	Historical and medieval
-do-	Barwala	Medieval
-do-	Basti Bhima	Medieval
-do-	Bhagla	Medieval
-do-	Bhana	Medieval
-do-	Bharolawali	Medieval
-do-	Bhighar	Medieval
-do-	Bhodia Khera	Medieval
-do-	Bhoida Khera	
-do-	Bhuna	Historical and medieval
-do-	Bhunra	Medieval
-do-	Bhuthan Klan	Medieval
-do-	Birbadi	Medieval
-do-	Birrana-I	Pre-Harappan, Harappan, Late Harappan, and historical
-do-	Birrana-II	Medieval
	Bishnoian	Medieval
-do-	Bodiwali	Medieval
-do-	Bora	Medieval
-do-	Buraj	Late Harappan, Painted Grey Ware, historical
-do-	Chandrawal	Historical and medieval
-do-	Chankoti	Medieval
-do-	Chiberwal	Historical and medieval
-do-	Chinder	Medieval
-do-	Chobara	Medieval
-do-	Chuli Bagrian	Historical and medieval
-do-	Chuli Khurad	Medieval
-do-	Chuli Klan	Medieval
-do-	Dadupur	Medieval
-do-	Dahman	Historical and medieval
-do-	Daryapur	Medieval
-do-	Dayar	Historical and medieval
-do-	Dhabi Khurad	Medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Fntehabad	Dhabi Klan	Historical and medieval
-do-	Dhand	Medieval
-do-	Dhanghar	Medieval
-do-	Dhani puttiwali	Medieval
-do-	Dhani Thobawali	Medieval
-do-	Dharnia	Medieval
-do-	Diggo	Medieval
-do-	Dulat	Medieval
-do-	Gadli	Medieval
-do-	Ghaswa	Medieval
-do-	Ghotru	Medieval
-do-	Gihlakhera	Medieval
-do-	Gorakhpur	Historical and medieval
-do-	Hanspur	Medieval
-do-	Haripura	Medieval
-do-	Hizarawa Khurad	Medieval
-do-	Hizarwa Klan	Historical and medieval
-do-	Hosanga	Medieval
-do-	Hukamawali	Medieval
-do-	Jallopur	Medieval
-do-	Jandwala	Historical and medieval
-do-	Jhalnia	Medieval
-do-	Kalotha	Medieval
-do-	Kamana	Medieval
-do-	Karnauli	Medieval
-do-	Kaulgarh	Medieval
-do-	Khabra Khurad	Medieval
-do-	Khabra Klan	Medieval
-do-	Khan Mohamad	Medieval
-do-	Kharakheri	Historical and medieval
-do-	Kharpur	Medieval
-do-	Khasa Pathana	Medieval
-do-	Khera	Medieval
-do-	Kheri Rahan	Medieval
-do-	Kirdhan	Medieval
-do-	Kirmara	Historical and medieval
-do-	Kuhmarian	Medieval
-do-	Kunal-I	Pre-Harappan, Harappan, Late Harappan, Painted Grey Ware, historical and medieval
-do-	Kunal-H to IV	Historical and medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Fatehabad	Laduwas	Medieval
-do-	Lahrian	Medieval
-do-	Luthera	Medieval
-do-	Maghawali	Medieval
-do-	Majra	Medieval
-do-	Malhar	Medieval
-do-	Manakpur	Medieval
-do-	Manawali	Medieval
-do-	Mara	Medieval
-do-	Meghara	Medieval
-do-	Mehuwala	Historical
-do-	Mimra	Medieval
-do-	Miran	Medieval
-do-	Mochiwali	Medieval
-do-	Modakhera	Medieval
-do-	Mohamadki	Medieval
-do-	Mohbatpur	Historical and medieval
-do-	Mussalli	Historical.
-do-	Nagpur	Medieval
-do-	Nanaksar	Medieval
-do-	Nangal	Medieval
-do-	Nangal	Medieval
-do-	Nimri	Medieval
-do-	Palsar	Medieval
-do-	Pilimandori	Historical and medieval
-do-	Ramsara	Historical and medieval
-do-	Ratia	Medieval
-do-	Ratta Khera	Medieval
-do-	Rejabad	Medieval
-do-	Sadalpur	Medieval
-do-	Sahidanwali	Medieval
-do-	Salali	. Medieval
-do-	Seikhupur Daroli	Medieval
-do-	Taliwara	Medieval
-do-	Talwandi Ruka	Medieval
-do-	Telanwali	Medieval
-do-	Thomaspura	Medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Fatehabad	Thuian	Historical and medieval
Hissar	Balak	Medieval
-do-	Balawas	Medieval
-do-	Bharri	Medieval
-do-	Bherian	Historical and medievel
-do-	Bure	Medieval
-do-	Chaudhariwas	Historical and medievel
-do-	Chirod	Historical and medievel
-do-	Damyana	Medieval
-do-	Dhaya	Medieval
-do-	Dubeta	Medieval
-do-	Gawar	Historical and medievel
-do-	Gorchi	Historical and medievel
-do-	Kanoh	Historical and medievel
-do-	Khaeri	Historical and medievel
-do-	Kirmara	Historical and medievel
-do-	Kulari	Medieval
-do-	Mirzapur	Historical and medievel
-do-	Nangthala	Historical and medievel
-do-	Nehla	Historical and medievel
-do-	Pabra	Historical and medievel
-do-	Payal	Historical and medievel
-do-	Raipur di Dhani	Medievel
-do-	Rawat Khera	Historical and medievel
-do-	Sabarwas	Medievel
-do-	Shamsukh	Medievel

25. EXCAVATION AT BALU, DISTRICT JIND.— U.V. Singh and Suraj Bhan with the assistance of S.B. Singh, S.P. Shukla and Arun Kesarwani of the Department of Ancient Indian History, Culture and Archaeology, Kurukshetra University, resumed excavation at Balu.

In all six trenches were dug during this season to expose the northern citadel wall further towards west. Five trenches were laid in continuation of last year's trenches in which the inner face of the northern wall of citadel was discovered. The inner side of the wall was traced up to 24m in length. Only three courses of brick of citadel wall were exposed in different trenches. In trench F.ext 5 and E. ext 5 a later structure comprising of two parallel walls (80cms. width) was found partly cutting the edge of the defence wall. These walls perhaps served as two side walls of a room. Another trench (I Ext 9) was laid further north to trace the northern edge

of the citadel wall. The edge of the wall was found eroded. The antiquities included beads of steatite, stone and faience, and terracotta nodules and cakes. One small circular steatite seal, showing four concentric circles with a cross at the centre, belonging to the post defence wall phase was also found.

26. EXPLORATION IN DISTRICT SIRSA.— In the course of village-to-village survey, Dhoop Singh and Chander Pal Singh, of the Department of Archaeology and Museums, Haryana, explored the following villages in Tehsils of Dabawali and Sirsa. The sites of archaeological interest as noticed are listed below.

Tehsil	*Village I Site*	*Cultural assemblage*
Dabawali	Banwala	Historical
-do-	Bhagsar	Medieval
-do-	Chakjallu	Historical
-do-	Chakrian	Historical
-do-	Chormarkhera	Medieval
-do-	Desu	Historical
-do-	Desu Jodha	Historical
-do-	Diwan Khera	Historical
-do-	Gidranwali	Medieval
-do-	Ghorwala	Historical
-do-	Kalawali	Historical
-do-	Khavwali	Historical
-do-	Lakhuana	Historical
-do-	Malikpur	Historical
-do-	Munna Wali	Historical
-do-	Ooda	Historical
-do-	Panniwala Mota	Medieval
-do-	Rampura	Medieval
-do-	Ratta Khera	Historical
-do-	Rishalia Khera	Historical
-do-	Roharwali	Historical
-do-	Salamkhera	Historical
-do-	Sawant Khera	Historical
Sirsa	Alika	Historical
-do-	Alipur Titu Khera	Medieval
-do-	Badha Gudha	Historical
-do-	Bahian	Historical
-do-	Bahudeen	Historical and medieval
-do-	Bakriwali	Medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Dabawah	Bangala	Historical
Sirsa	Bansudhar	Medieval
-do-	Barasari	Historical
-do-	Baruwali	Historical
-do-	Baruwali	Medieval
-do-	Bhangoo	Historical
-do-	Biruwala Gudha	Medieval
-do-	Bishansingh	Historical and medieval
-do-	Bizigar Ther	Medieval
-do-	Budha bahana	Historical
-do-	Budhimeri	Historical
-do-	Buratwala	Historical
-do-	Chaharwala	Medieval
-do-	Chak Sahiba	Historical
-do-	Chakraiya	Historical
-do-	Chamal	Medieval
-do-	Chatrian	Medieval
-do-	Chuburaja	Medieval
-do-	Daya Ram dhani	Historical
-do-	Debra Kalan	Medieval
-do-	Desu Khurad	Historical
-do-	Dhamora Theh	Medieval
-do-	Dhani Bhagawali	Historical
-do-	Dhotar	Historical
-do-	Ding Mandi	Historical
-do-	Dudiwali	Historical
-do-	Dukra	Historical
-do-	Fakirawali Thehri	Medieval
-do-	Fatehapuria	Historical
-do-	Gadhi	Historical
-do-	Ghusina	Medieval
-do-	Goriwala	Historical
-do-	Gudia Khera	Historical and medieval
-do-	Hanzira	Medieval
-do-	Harnia Khurad	Historical
-do-	Havold	Historical
-do-	Humaunian Khera	Medieval
-do-	Jagmalara	Historical
-do-	Jamal	Medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Sirsa	Jiwannagar	Historical
-do-	Jodhakan	Harappan, Painted Grey Ware and historical
-do-	Jodia	Medieval
-do-	Jogiwala	Historical and medieval
-do-	Kagdana	Medieval
-do-	Kamal	Historical
-do-	Kanwar Sahib	Medieval
-do-	Karamgarh	Medieval
-do-	Kariwala	Painted Grey ware and historical
-do-	Kassan Khera	Historical
-do-	Kawal	Historical
-do-	Keharwala	Historical
-do-	Keshopura	Historical
-do-	Kheri	Medieval
-do-	Kirarkot	Historical and medieval
-do-	Kishanpura	Historical
-do-	Kotali	Historical
-do-	Kumaharian	Medieval
-do-	Kumbhthala	Historical
-do-	Kussambhi	Historical
-do-	Kutiana	Historical and medieval
-do-	Kuttabad	Historical
-do-	Lakarwali	Historical
-do-	Langewala	Medieval
-do-	Liwalwali	Historical
-do-	Ludesar	Medieval
-do-	Madhosinghana	Historical and medieval
-do-	Maina Khera	Medieval
-do-	Malakhan	Historical
-do-	Manak Dewan	Medieval
-do-	Mannakhera	Historical
-do-	Mattuwala	Historical
-do-	Mirpur	Historical
-do-	Mirzapur Ther	Medieval
-do-	Mithanpura	Historical
-do-	Mithi Surera	Historical
-do-	Mochiwali	Historical
-do-	Mohamadpuria	Medieval
-do-	Moharsingwala	Medieval

Tehsil	*Village/Site*	*Cultural assemblage*
Sirsa	Moriwala	Historical and medieval
-do-	Mozukhera Purana	Historical
-do-	Nakora	Historical
-do-	Nanksar Dhani	Medieval
-do-	Narian Khera	Historical
-do-	Nathour	Historical
-do-	Nathusari Khurad	Medieval
-do-	Nathusari Klan	Medieval
-do-	Nigrana	Historical
-do-	Nimla	Historical
-do-	Nirban	Historical and medieval
-do-	Ottu	Historical
-do-	Pacca	Historical
-do-	Patil Dabar	Historical and medieval
-do-	Puransingh Dhani	Historical
-do-	Raipur	Medieval
-do-	Rampur	Medieval.
-do-	Rampura Dhillon	Historical and medieval
-do-	Randhwa	Historical and medieval
-do-	Rania	Historical
-do-	Ranjitpur Theh	Medieval
-do-	Rasulpur	Historical
-do-	Ratta Khera	Historical
-do-	Rori	Historical
-do-	Rupana Bishonian	Medieval
-do-	Sadewala	Historical
-do-	Sahuwala	Historical
-do-	Sainpal	Historical
-do-	Shahpuria	Medieval
-do-	Sheikhu Khera	Medieval
-do-	Silkandarpur	Historical
-do-	Sirsa	Medieval
-do-	Sukar Mandori	Medieval
-do-	Takhatmal	Historical
-do-	Talwara Khurad	Historical
-do-	Tarkanwali	Medieval
-do-	Thiraj	Historical
-do-	Zhoder Rohi	Historical

JAMMU AND KASHMIR

27. EXPLORATION IN DISTRICT BARAMULLA.— S.N. Jaiswal of the Srinagar Circle of the Survey carried out an exploration and located the following sites of archaeological interest:

Taluk	*Village/Site*	*Cultural assemblage*
Pattan	Baba Khaipur	Kushana and early medieval
-do-	Batpur	Medieval
-do-	Buts	Early and late medieval
-do-	Dilin (site locally known as Chandigarh)	Neolithic and medieval
-do-	Hanjiwere Patti Rashipora	Medieval
-do-	Kalampora	Kushana and early medieval
-do-	Khargan	Medieval
-do-	Mohandpur	Early and late medieval
-do-	Mamusa (Darweshbagh)	Kushana and early medieval
-do-	Palapur	Neolithic
-do-	Palhalan	Kushana and early medieval
-do-	Parihaspora (Locally known as Dak Teng)	Medieval
-do-	Parihaspora (locally known as Deor Wuder) on the map Diwar	Medieval
-do-	Parihaspora (Locally known as Gordan on the map Diwar)	Neolithic and early medieval
-do-	Ring	Medieval
-do-	Shuch Palpora) (Sutsipur)	
-do-	Teandarsir period	Medieval
-do-	Thapar	Kushana and early medieval
-do-	Thapar Bala	Early medieval and late medieval
-do-	Tilgam	Early and late medieval

28. EXPLORATION OF IMPERIAL MUGHAL ROUTE, DISTRICT JAMMU.— The exploration of the Imperial Mughal route was conducted this year by the Centre of Central Asian Studies, Kashmir University. The work was confined from Chingas to Thana Mandi covering a distance of 21 km.

About half a km above Chingas Sarai (Long.74° 18'N, Lat. 33" 15'E), and just a few yards below the present Jammu Rajouri-highway, are the ruins of an ancient Boali. The stone columns with massive side walls are still existing. The presence of such remains around here again confirm the evidence that this hilly region was occupied even before the advent of Mughals. This is, however, also known by the temple ruins still extant at Panjnara (Kalakot Tehsil) District Rajouri or at Meandhar on way to Surankot in the area. The layout of these temples especially Callular peristyle facing the central shrine bear close link with similar architectural evidence of temples in the Valley. Such types of structural evidence are reported at Saidabad in Bhimbar area now in Pakistan. Apart from temple complex at Saidabad, it is known for the Sarai cum Fort complexes of the Mughal period which happened to be first of kind of building on the Imperial Mughal route on the other side of Kuman Cosha. With the domination of such structural applications in the entire district of Rajouri, it is obvious that this hilly area as a whole was a seat of hectic activity on cultural, social and political fronts from very early times. Even during Kushan times, it happened to be the road from the then plains to the vale of Kashmir. The red ware sherds of Kushan period represented by deep bowls with razor-edged rims and thin sides tapering towards the bottom were found at a place known as Kheora (Long. 74" 18N, Lat. 33° 23'E) a village about 1.50km above Rajouri proper on Rajouri-Darhal link road. Hiuen Tstang in seventh century AD who returned to the plains through this area mentions that the hill state of Rajapuri (modern Rajouri) and Parnotsa (modern Poonch), were not independent but were subjected to Kashmir. Coins of Jayapida-Vinayaditya and of Harsha were reported to have been found at Panjnara substantiating thereby Kashmir's suzerainty over the district of Rajouri.

Firstly an interesting structural complex of a sarai, mosque, and a big assembly hall was noticed at Muradpur (Long. 74° 19'N, Lat. 33° 19' E), 7km from Rajouri on Chingas-Rajouri Road. The top structure has completely fallen down and whatever remains is still under constant process of quarrying. The structure by dint of its situation must have commanded a very impressive position. It overlooks the green fields below and Chingas Tawi (as it is called here - after being fed by numerous streams) and the Dangri hill in the front. The surrounding walls and the bases of bulbous bastions are still existing. One side of the wall measures over 30m and its thickness is about 1.75m. It is entirely built of rubble stones with lime *surkhi* mortar. It included as usual a set of rooms; one such room approximately measures 6.30 x 6.30m. Another set of structural complex which included a mosque and projected cells of an assembly hall were also located just on the river bank. The ruins are lying below the Chingas-Rajouri Road and at a distance about a km from the sarai itself.

The mosque is of imposing dimensions with a courtyard in its front raised on a higher level. It is still intact and could be saved from further damage. The walls and other remains could be cleared off from the jungle growth. All the structures especially the mosque stands finely plastered.

Higher up about 2km from here, remains of an ancient *baoli* were found. The architectural features resemble with *baolis* found at Berari 3km above Naushera and at Chingas or at Ricchawa 6km above Chingas.

Besides the ruins of a medieval temple at Anderkot Mohalla at Rajouri (Long. 74° 18' N,

Lat. 33° 23' E), a good number of Mughal ruins represented by fort-cum-palaces, sarais, mosques, gardens, compartments and assembly halls, hammams situated on either sides of the river are there. These are now occupied by Civil hospital, Police and Forest Departments and almost all the structures stand renovated leaving only a portion of these in their original position. The ruins of small mosque in the market are still extant.

At Kheora, a portion of an enclosure wall built in stones with lime, *surkhi* and brick *zeera* mortar is still existing. Possibly being on a higher altitude, the route was perhaps abandoned since no such structures are found on this route leading to Darhal covering a distance of more than 10km. The actual Mughal route now lies down below.

The next remains an enclosed wall with two entrance gateways lie on this route at Fatehpur (Long 74° 18' N, Lat. 33° 25'E), at a distance of 7 km from Rajouri proper.

Below the present Rajouri-Thanamandi link road, a Mughal *baoli* with an arched opening has been noticed. The sidewalls are built of massive stones.

About 5km from Fatehpur is a hillock on the right side of the link road at a place called Saj (Long. 74° 20' N, Lat. 33° 26' E), on its summit are Mughal remains commanding a magnificant view against a natural setting.

Since, Thanamandi happened to be a main halting place after Rajouri and before proceeding further on a hazardous journey to the mountainous range of Rattan Shah Pir, the Mughals have erected here a very graceful complex of Sarai with double set of enclosure walls infused with a new brilliance. It is a production of the finest achievement of the Mughals not only so far as its magnificence is concerned but because of its ornamental value also.

29. EXPLORATION IN DISTRICT KATHUA.— During the course of exploration conducted in the taluks of Kathua, Hiranagar and Basoli, S.N. Kesarwani of the Srinagar Circle of the Survey noticed antiquarian remains in twenty-two villages in the valleys of the Ravi and Ujh. The remains range in time from late Harappan to the nineteenth century. The sites yielding antiquarian remains with their cultural assemblages are tabulated below:

Taluk	*Village /Site*	*Cultural assemblage*
Basoli	Aripur Mara	Sculptures and *baoli* of early and late medieval
-do-	Basoli	Late medieval
-do-	Batara	Temple and *baoli* of late medieval
-do-	Hat	Brahmanical sculptures, fortress, palace and Temple of early and late medieval
-do-	Morta	Palace of late medieval period
-do-	Nagarota	Temple and *baoli* of late medievel
-do-	Palasi	Tank, temple and sarai of late medieval
-do-	Pharla	Temple and *baoli* of late medieval
-do-	Pharnat (Nahd)	Temple, and stepped well of late medieval

Taluk	Village/Site	Cultural assemblage
Basoli	Thane	Sculpture, stepped well and baoli of early and late medieval
-do-	Then	Fortress and palace of late medieval
-do-	Toare	Sculptures, *baoli* and temple of early and late medieval
Hiranagar	Jasmirgarh	Kushana, fortress, temple and wells (late medieval)
-do-	Kotla	Kushana and medieval
-do-	Rei	Sculptures and architectural members, early medieval temple and late medieval well
Kathua	Airwan	Late Harappan, early and late medieval sculptures
-do-	Basantpur	Kushana, architectural members, early medieval temple and late medieval well
-do-	Jasrota	Kushana, Gupta, hill fort
-do-	Jawalapur	Late medieval

-do-	Mahtabgarh, Trikot	Upper Palaeolith (?)
-do-	Nagri-Parol	Medieval, Ziarat of Baba Pir Chhatra Shah, Baoli and palace of late medieval
-do-	Samoo	Late medieval temple

KARNATAKA

30. EXPLORATION IN DISTRICT BELGAUM.— Under the guidance of B. Narasimhaiah of the Bangalore Circle of the Survey, S.K. Joshi, under Village-to-Village Survey discovered a temple belonging to sixteenth century AD, in the village Adi, a late Chalukyan temple in the village Bidi and a fort assignable to eighteenth-nineteenth century in the village Hindalgi all in Khanapur taluk.

31. EXCAVATION AT HAMPI, DISTRICT BELLARY.— In continuation of the last year's *{1984-85,* pp. 25-28) work, the Hampi National Project of the Survey, under the direction of B. Nara simhaiah, assisted by K.P. Poonacha, R. Venkata Shiva Sharma, Hanumanthappa Telugu, M. Loganathan, T.P. Balakrishna Unnithan, J. Ranganatha and V.N. Joshi resumed excavation with the view of exposing the structures and understanding the plan of southern and western block of the citadel (Royal Enclosure) and in the Jaina temple complex behind the Elephants Stable.

The excavation carried out in the area measuring 10,000sqm in the Royal Enclosure revealed the remnants of fourteen structures (STR-5 to STR-18), as also the inner fortification wall (wall No.l) running north to south and east to west directions.

STR-5 was rectangular in plan measuring 70.65 X 9.00m with a height of 0.90m. One hundred and sixteen granite pillar bases of varying dimension arranged at regular intervals in four rows on the platform suggested that the hall had been divided into three bays, each measuring 2.40m in width. The entrance was at the northern end as evidenced by a single thick granite block measuring 1.6 x 0.6m provided as a step with 0.25m rise. Rest of the platforms (*i.e.,* STR-6 to STR-11), were almost prototypes of STR-5 in so far as the layout pattern and construction were concerned.

To the west of STR-5 was traced a passage measuring 71.15 x 4.40m accommodating a 37m long supply channel set in rectangular granite slabs connected at the rear end with a 2m deep rectangular tank (measuring 2.00 X 1.65m), dug into the natural bedrock with a flight of steps, and fed by the western arm of the main aqueduct line fronting the northern end of the platforms.

STR-6 and STR-7 formed a block of two rectangular platforms measuring 71.1 X 8.5 X 0.9m and 62.0 X 8.9 X 0.95m respectively. There was a 75cm wide narrow passage separating the two structures. Each platform was having four rows of pillar bases forming three bays. Each bay had a width of 2.5m in STR-6 and 2.35m width in STR-7. There was an entrance provided to STR-7 on the north-western corner with flight of steps of granite stones.

Further west of the above structure STR-8 and STR-9 formed another block of two platforms separated by a 75cm wide narrow passage. STR-8 measuring 73.95 X 13.40 X1.0m was larger than the other structures and accommodated six rows of pillar bases forming five bays of 2.32m width. At a later stage this structure was extended towards north by adding some more similar courses to a length of 4.7m and core filled with rubble and earth. It was further extended by another 6m towards north by providing simple moulded stones with plain verticals. This structure was provided with a small tank measuring 2.25m square and 1.10m deep, built of thick granite rectangular slabs. The tank was provided with flight of steps on the west and was plastered with lime mortar. STR-8 was provided with a flight of steps on the north-east.

STR-9 was a rectangular platform measuring 73.60 X 8.70m accommodating four rows of pillar bases forming three bays each measuring 2.50m in width.

Further probing in the area to the south of the stepped tank (STR-10 exposed earlier), revealed the remnants of a square (16.6m) structure (STR-10) existing to a height of 70cm consisting of basement of rough granite slabs with plain verticals. In the middle of this structure was traced a room built of bricks, set in lime mortar with two short pillars indicative of an entrance facing east. A pedestal in black granite with *kudu* designs at the corners was encountered in this room. There were twelve pillar bases kept at an equal interval of 2.10m, 4 each on the east and west and 2 each on the north and south. Similarly there were two rows of pillar bases provided on the four directions at a lower level. Lime concrete chunks and plastered architectural members indicate that the structure was provided with a well-laid lime concrete floor with plastered wall surface.

Excavation was also conducted on the southern block of the citadel (Royal Enclosure) in K, L, M, N and P, series of trenches laid in east to west direction. The debris accumulated here varied in height from 0.50m to 3.50m, the clearance of which has revealed the remnants of a huge structure (STR-11). The architectural members consisted of rough granite basement, moulded bottom and top courses intervened by a plain vertical course with an indication of a double plinth. It had a four pillared *mandapa* with a superstructure including *sikhara* at the top set in brick with lime mortar. Stucco figures depicting *sikhara* were also encountered. The other antiquities encountered include two balustrades and a short stone pillar with a squating lion on the head of an elephant. This structure too was reset to its original shape.

Excavation conducted on the western side of the citadel revealed the basement course of the rectangular halls STR-12 and STR-13 oriented north to south, measuring 62 x 9m.

The further extension of excavation on the western side brought to light the foundation course of the inner fortification wall (Wall No.l) built of huge boulders on the natural bedrock above which a course of cyclopian blocks was laid. It was traced to a length of 40m in east to west direction.

Excavation extended towards the west in between outer and inner enclosure walls in north to south direction revealed a 6.5m square tank (STR-14) with a depth of 3.7m provided with a flight of steps on the north. At a height of 2.2m from the bottom of the tank was provided an offset with a stone inlet on the west. The tank was excavated into the natural bedrock with walls built on the four sides in granite blocks set in mud mortar with a lime plaster on the interior. The parapet provided to the structure at the ground level was heavily disturbed.

To the north of the above tank at a distance of 56.3m two silos STR-15 and STR-16 excavated into the natural bed-rock were traced. STR-15 was 4.25m deep with a circumference of 5m whereas STR-16 was 3m deep with 3m circumference.

On the west of Mahanavami Dibba STR-17 measuring 29.00 X 12.15m with a courtyard and backyard exposed earlier was further probed and the bottom most course of the rubble wall with thickness varying from 1.0m to 1.7m on the east, west, north and south set in mud mortar was traced. At the centre was a rectangular hall measuring 4.3 X 4.8m with 2.65m thick rubble wall set in mud mortar along with thick granite pillars at the cardinal directions indicating that there was an upper floor. There was an entrance on the east and 2.45m wide circumambulatory passage provided around the hall. There were two tanks excavated into the natural bedrock with heavily damaged veneering walls built of rubble in mud-mortar with lime plaster. On the western side there was a flight of small steps between two balustrades. Two courses of black slabs on the granite basement course used for veneering were traced on the east and west. To the south of this courtyard another hall was exposed with a flight of three steps and stone pavement in a heavily disturbed condition.

Further east of this was traced a rectangular structure (STR-18) measuring 12.1 X18.2m with a raised platform with rubble walls on the four sides set in mud mortar with another hall measuring 4.00 X 3.85m with four rubble walls with a thickness of 1.15m and 0.80m wide circumambulatory passage. The wall measured 1.85m in width on the south and 3.5m on the east and 2.45m on the west. There were two entrances to this structure, one from the southwest and the other from northwest. In front of south-western entrance was an area of 4.95m paved with chlorite schist slabs.

Trial excavation at an area west of King's Audience Hall yielded five limestone panels depicting anecdotes from the life of Buddha (pl. VII A). These panels must have been brought from somewhere else and stacked here. Probably the other members of a limestone structure to which these panels belonged might have been used for decorating the hall in front of an underground chamber in the Royal Enclosure.

Excavations in the Jaina complex known as Pan-Supari Bazaar in the Vijayanagara times exposed half buried temples. Among the temples exposed, two belong to Jaina, one to Siva and the other one to Vishnu. The temples were in dilapidated condition and require conservation work. True to its name as Pan-Supari Bazaar plenty of arecanuts were encountered in this area.

Excavation in the Royal Enclosure has brought to light the sculptures of medium size. Mention may be made of two beautiful mutilated images of *yaksha* in sitting posture, an unidentified figure of a male deity seated on well-executed pedestal in *padmasana* with *jata-mukuta* (pl. VII B), and a four armed mutilated Vishnu sculpture standing in *samabhanga* posture with *sankha, chakra* and lotus bud with *prabhavali* and beautifully ornamented with the carvings of *vanamala, yajnopavita,* armlets, ankelts, waist bands, finger rings and *kirita.* Two black granite images of a medium size of the Vaishnava saints and a female figure seated in *padmasana* were also discovered. Among the miniature sculptures, all carved in soapstone, the image of *Ganesa, Nandi,* head portion of a female deity are noteworthy. A number of miniature *Siva-lingas* in soapstone and one in crystal were also unearthed. Human and animal figures and a well-modelled lamp on stand represents the antiquities in the terracotta media.

Other important antiquities encountered in the excavation were a variety of beads of terracotta and semiprecious stones and iron objects like nails used in doors, copper coins and parts of a small plate, rings and a miniature goblet. Two gold lockets *(mangala sutra),* one with Gaja-Lakshmi motif were the outstanding discoveries.

The ceramic industry is represented by the occurrence of plain and decorated medieval black ware and red ware, few of them having burnished glare. Fragments of soapstone dish are noteworthy. Deluxe Chinese porcelain sherds, some of them having Chinese letters at the base and floral and animal designs on the body were also found.

32. EXCAVATION AT HAMPI, DISTRICT BELLARY.— A. Sundara, with the assistance of Balas-ubramanya, of the Department of Archaeology and Museums, Government of Karnataka continued excavation at Hampi. Palatial structure Nos. 8, 9, 10 and 12, were encountered.

Palatial structure No. 8: This structure within an enclosure wall located to the east of structure No. 7 consisted of a central room passage and three more rooms - one each on the east, west and north. There were two more rooms noticed in this structure.

Palatial structure No. 9: South of the structure No. 4, was the structure No. 9 having four rooms within an enclosure wall. Behind the western room was a water cistern having entrance from the east.

Palatial structure No. 10: This structure was located within a rectangular enclosure. Facing main structure, it consisted of three receding lime plastered platforms. On the topmost platform was a room attached to the rear wall. The terrace consisted of three simple courses

accessible at the corners by flights of steps. The flight of steps at the west was flanked by a stucco balustrade. There were three rooms to the east of the main structure at the lower terrace. This terrace had two raised platforms.

Palatial structure No. 12: This east facing structure was situated to the north of structure 4A. It consisted of two receding stepped lime plastered terraces. Access to the second and third floors was at the corners. At the centre of the terrace was a central room with lime plastered floor. The terrace consisted of three courses with simple mouldings. Fragments of stucco and terracotta figures were found in the debris. The work is in progress.

33. EXPLORATION IN DISTRICT BIDAR.— In the course of Village-to-village survey conducted in Bidar taluk, S.G. Samak of the Department of Archaeology and Museums, Karnataka, discovered the following sites of archaeological interest:

Taluk	*Villages*	*Cultural assemblages*
Bidar	Alimber	Medieval site
-do-	Basantpur	Middle Paleolithic site
-do-	Imambad	Middle Paleolithic site
-do-	Kaplapur	Middle Paleolithic site
-do-	Kangti	Middle Paleolithic site
-do-	Malegaon	Middle Paleolithic site
-do-	Markal	Mutilated goddess probably Sarasvati holding *Pasha* and *Ankusha* in the upper hands (eleventh-twelfth century AD)
-do-	Srimandal	Middle Paleolithic site
-do-	Sultanpur	Middle Paleolithic site
-do-	Yernalli	Middle Paleolithic site

34. EXPLORATION IN DISTRICT GULBARGA.— Exploration work was taken up in the submergence area of the Bhima Irrigation project by. C.S. Patil of the Department of Archaeology and Museums, Karnataka. At Roja in Shahpur taluk at the confluence of a stream and the river Bhima an ancient site with several potsherds belonging to neolithic, megalithic, early historical and medieval period were noticed. The noteworthy findings in the collection are a piece of rouletted ware and a black ware containing two letters in Brahmi script reading *pu tha.*

35. EXCAVATION AT YEDIYAPUR, DISTRICT GULBARGA.— In continuation of the previous investigations *(1984-85,* pp.30-31) of Stone Age sites in the Baichbal valley of Shorapur taluk, K. Paddayya of the Deccan College, Postgraduate and Research Institute, Pune, excavated one of the Acheulian localities (Locality VI) in order to obtain a more detailed picture of this cultural phase.

This locality is one among a complex of about 15 Acheulian occurrences lying along the banks of an ephemeral stream called the Fatehpur nullah, which forms part of the drainage

system of the Baichbal valley (an erosional basin measuring about 250 sq. km in extent and enclosed by shale-limestone tablelands). The Acheulian localities occur in a linear fashion in a stretch of about 4km between the villages of Fatehpur (situated in the foothill area of the tablelands) and Yediyapur.

The excavated locality (Locality VI) is situated about a kilometre to the of the village of Yediyapur. It measures 100m east-west and 85m north-south and consists of a cultivated field covered with black cotton soil. It lies 250m away from the right bank of the Fatehpur nullah and 6m above its bed (443m above mean sea level). While the locality merges with the adjoining agricultural lands on the northern and southern sides, its eastern and western limits are defined by 1 to 2m high field bunds which the agriculturists of this area frequently raise around their fields for arresting soil erosion. The cultivated field housing the excavated Acheulian locality forms part of the sloping surface of an interfluve, the like of which make up the floor of the Baichbal valley. These interfluves are gently undulating and represent the sculptural remnants of erosional activity which led to the formation of the valley in the geological past. For this purpose a trench (Tr. 1) measuring 10m east-west and 5m north-south was laid on the southern side of the field channel. The Acheulian occupation took place on a slightly elevated granite gneiss ridge-like topographical feature forming part of the sloping surface of an interfluve of the valley floor. From the distribution of manuports and artifactual material within the excavated area and the sample pits dug around it, it appears that the limits of the Acheulian occupation seem more or less to coincide with the trench limits except on the north. On the northern side the occupation covers an estimated additional area of 40 to 50 sq.m. Thus the original site measured about 100 sq.m in extent.

Below 10 to 15cm thick top soil (loose brownish soil sometimes mixed up with black soil) a clear-cut Acheulian horizon was identified and exposed. For purposes of convenience it was excavated as two digging levels (upper and lower), each measuring 5 to 10cm in thickness. These were underlain by natural soil, as formed by disintegrated and weathered granite gneiss. The two levels consisted of raw material block of dolerite and other rocks accumulated by man, finished artifacts and debitage, and fragments of bedrock, all set in a hard matrix of light brown/whitish murum-like material resulting from granite gneiss weathering. As some of the artifacts of granite gneiss are also highly weathered, this rock weathering appears to have taken place by and large after the Acheulian occupation.

The presence of finished tools and debitage as well as types like anvils and hammer-stones, the fresh (unrolled) and sharp nature of flake-scars and the lack of any preferred orientation in the positions of artifacts all place beyond doubt the primary character of the site.

Both the Acheulian levels, more particularly the upper one, yielded a large number of slab-like blocks (up to 30cm across) of schistose rocks. These blocks appear to have been brought to the site for flooring purposes. This floor-making may have been for living or for food-processing.

The two Acheulian levels yielded over five hundred artifacts including waste products. The excavated assemblages and the surface collection from this spot present a homogeneous appearance. As against the use of limestone by the Acheulian occupants of the neighbouring Acheulian valley, the Yediyapur assemblages are characterized by the manufacture of tools on

coarse-grained rocks like dolerite, granite gneiss, schistose rocks etc. The utilization of naturally available flakes, the unstandardized nature of the artifact types and the presence of quite a few specimens of discoids and chopping tools are certain other features which separate these assemblages from those of the Hunsgi valley. Handaxes, cleavers and knives were the other types represented in the collections.

Explorations around Yediyapur brought to light three additional Acheulian localities. This assemblage appears to belong to an evolved phase within the Acheulian cultural tradition.

36. EXCAVATION AT NAGARESVARA TEMPLE COMPLEX, HALEBIDU, DISTRICT HASSAN.— B. Narasimhaiah of Bangalore circle of the Survey assisted by Ananda Alwar, M.N. Vishwanath, G. Krishnamurthy, M.M. Hadpad and B. Mariappa carried out excavation with a view to exposing the buried temple complex, which might be earlier than the existing Hoysalesvara temple. The five mounds called as the Nagaresvara temple complex were situated behind the modern Tourist Bungalow, which is towards west of the Hoysalesvara temple. Of the five mounds, three were on the north to south axis of which the central one was bigger.

The excavation in the central mound and the one east of it revealed a huge temple (56.6 X 35.7m) identified as the Nagaresvara temple 2 (pl. VIIIA), resting over a high *adhisthana* which in turn rests over *ekapada jagati* (pl. VIIIB). The height of the *adhisthana* was 1.8m. On plan, temple had on its west to east axis a *garbhagriha* (2.58 X 2.56m), *sukanasi (*2.7 X 2.56m), *navaranga* (8.75sq.m) provided by three entrance *mandapas* (2.80 X 2.45m each) on north, south and east and a *nandi mandapa* (app. 16.0 X 9.3m). The extant portion in elevation was *jagati* and *bhitti.* The extended portion (3.0m) of the *jagati* around the temple represented the *pradakshinapatha,* which was found paved with slabs at places. *The jagati,* stellate on plan, had provision for fixing miniature elephants at cardinal directions as evidenced at southern corner.

The four mouldings of the *adhisthana* were represented by (from bottom upwards) *adho-kumuda, pattika, hara* and *urdhvakumuda.* The *bhitti* of the temple had six rows of friezes as in the case of other typical Hoysala temples. The friezes are (from bottom upwards) *gajatala, asvatala, pushpatorana tala, makara tola* and *hamsa tola.*

Temple 3 (pl.IX) located towards north of temple 2 was almost similar on plan and elevation, except in dimension and for the absence of *nandimandapa.*

Temple 1 which was towards south of temple 2 was being excavated.

The excavation at this temple complex yielded a number of loose sculptures and intricately carved architectural members belonging to Hoysala School of Art. Among the important sculptures mention may be made of *madanika* (pl..X) Vishnu and Bhairava, Nataraja and Kali, Siva as Kalari, Kalingamardhana Krishna, *dvarapala,* Mahishasuramardini, head of a lady, etc.

37. EXCAVATION AT BANAHALLI, DISTRICT KOLAR.— The Bangalore Circle of the Survey under the direction of B. Narasimhaiah with the assistance of C. Krishnamurthy, M. M. Hadpad, and M.V. Mallikarjuna resumed excavation at Banahalli with a view to understanding the way of life and settlement pattern of the people of each period and to train the students of the

Institute of Archaeology of the Survey. The excavation was resumed from the overlap phase in the earlier trenches and from early historical level in four new trenches of l0msq. The result is as follows.

The excavation in the Chalcolithic-Megalithic overlap phase (Period II) revealed interesting custom of disposing of the dead. They buried their dead inside the habitation. The burial pit oval in plan and oriented north to south was indicated by cairn packing. The skeleton was also oriented north to south with head towards north but slightly tilted either towards east or west (pl.XIA). It was interesting that only in one case the feet of the dead seem to have been dislocated. The burial furniture included bowls in black-and-red ware, vases in burnished red as well as grey wares and spouted vessels in burnished grey ware (pl.XIB).

Another important feature of this period was represented by great spurt in structural activity. In the limited excavated area a large circular house was found surrounded by smaller houses. The circular houses (pl.XII) measured 6m in diameter with a ridge on the periphery and well-prepared floor over which a quern was placed. This house had an apron of well-rammed potsherds on the exterior and had gone through repairs and reconstruction at least twice.

The pottery repertoire included burnished and unburnished grey ware, red ware and black-and-red ware.

Antiquities encountered were microliths made on quartz, beads of crystal, shell, steatite, agate and carnelian, and a pottery burnisher. A copper parer was also recovered.

The Period III (Megalithic) yielded very interesting phenomena in each house having an area marked probably for smelting iron. At least two houses so far exposed yielded plenty of iron slags and also a furnace-like structure with lot of burning activity.

The antiquities recovered from this Black-and-red Ware level included beads, iron objects like spearhead, arrowhead and knife.

Two megalithic tombs situated in a field south of the mound were also exposed. Among the two, one did not yield any human remains or burial furniture. However, the other one yielded burial furnitures represented by Black-and-red Ware vessels (pl.XIII). The tombs were made of four orthostats arranged either in a clockwise or contra-clockwise direction. The southern orthostat was provided with a U-shaped port-hole and was closed with a slab at the centre.

Period IV belonging to early historical period shows continuation of method of construction of houses from the earlier period and random rubble walls probably erected to make the ground level. Antiquities included beads of various shapes and materials like terracotta, rock-crystal, lapis-lazuli, carnelian, glass, agate, jade, etc., and terracotta human as well as animal figurines.

However the Period I (Neolithic-Chalcolithic) remains to be probed further to ascertain details of the life of the people.

38. EXPLORATION IN DISTRICT NORTH KANARA.- K.G. Bhatsoori of the Department of Archaeology and Museums, Karnataka under Village-to-Village survey of antiquarian remains discovered the following archaeological sites:

Taluk	*Village/Site*	*Antiquarian remains*
Halyal	Chennapura	Mahishamardini kept under a tree near the modern Mahishamardini temple dated to eleventh-thirteenth century AD
-do-	Halyal	Mallikarjuna temple ascribable to eleventh-twelfth century AD. The wall portion is renovated
Karwar	Balemane forest area	Siva-*Linga* in the modern Siva temple dated to eighteenth-nineteenth century AD
-do-	Devkar	Ramalinga temple of Kalyani Chalukyan Period. Sculpture of *dvibhuja* Ganesa ascribable to seventh-eighth century AD. Mahishamardhini of c.ninth-tenth century Ad and Sculptures of Mahisha-mardini and Ganesa of sixteenth-seventeeth century AD.
-do-	Hartuge	Image of Venkataramana temple which is dilapidated
-do-	Kaiga	Hereo stone of c.sixteenth-seventeenth century AD and human votive figures are in the modern Devi temple
-do-	Lower Murde	Siva-*linga* in the Siva temple of eithteenth-nineteenth century AD
-do-	Sulegore	In the modern Ramalinga temple sculptures of Siva-*linga* and Mahishamardini dated to fifteenth-sixteenth century AD and the sculpture of Ganesa of tenth-eleventh century AD
-do-	Virje	*Dvibhuja* Ganesa dated sixteenth-seventeenth century AD the modern Devi temple.
Supa	Anmod	A neolithic axe for the first time discovered in the North Kanara District, three dilapidated temples of eleventh-twelfth century AD with the sculpture of Mahishamardini, Gajalakshmi and Siva-*linga* of seventeenth century AD
-do-	Bazar kuney	Mahishamardini, Siva-*linga* and nandi in the modern Devi temple of seventeenth-eighteenth century AD
-do-	Birkol	Bronze image of Ganesa dated eighteenth century AD in the modern Lakshminarasimha temple.

Taluk	Village/Site	Antiquarian remains
Supa	Ivali	Ganapati, *dvarpalakas* in the Naganatha temple of c..eighteenth century AD.
-do-	Kalmuligram	Sculptures of Ganesa, Nagini, in the modern Supa-Ramalinga temple of seventeenth-eighteenth century AD.
-do-	Kannar	Modern Mahadeva temple having sculpture of Vishnu and Mahishamardini of fifteenth-sixteenth century AD.
-do-	Kelvinaya	Sculptures of Gajalakshmi, Durga, and Ganesa, seventeenth-eighteenth century AD.
-do-	Palde	Sculptures of Mahishamardini in the modern Janmi Devasthan, seventeenth-eighteenth century AD.
-do-	Sithawarle	Jaina *basti* dated to sixteenth-seventeenth century AD.
-do-	Usucla	Mahishamardani sixteenth-seventeenth century AD.
Yellapur	Advada	Sculptures of Siva-*linga*, Gajalakshmi and paduke locally known as Dattatreya paduke in the modern Ramalinga temple, sixteenth century AD.
-do-	Badegund	Mahishamardini and *dvibhuja* Ganesa, tenth-eleventh century AD in the modern Devi and Ramalinga temples.
-do-	Barballi	Bronze image of Ganesa, Mahishamardini and tury AD in the modern Ganapati temple.
-do-	Kalche	Bronzes of Ganapati, Bhairava and Narasimha in the datable to sixteenth-seventeenth century AD Lakshmi Narasimha temple (modern).
-do-	Kattige	Ganesa sculpture in the Isvara temple datable to eighteenth century AD.
-do-	Kodsalli	Ganesa and Narasimha images dated to nineteenth century AD in the Lakshmi-Narasimha temple (modern).

39. EXPLORATION IN DISTRICT SHIMOGA.- In the course of exploration, C.S. Seshadri of Bangalore Circle of the survey under the guidance of B. Narasimhaiah discovered the following sites:

Taluk	*Village/Site*	*Cultural assemblage*
Shikaripur	Karige	Hero-stones and early historical pottery
-do-	Kodihalli	Satavahana site with medieval sculptures and Hero-stones with inscription Satavahana site
-do-	Malur	with medieval sculptures. Medieval
-do-	Punegahalli	sculptures and hero-stones. Temples of
-do-	Togarsi	Hoysala and Nayaka period with inscriptions Loose sculptures and Hero-stones and sculp-
-do-	Udagani	tures of medieval period

KERALA

40. EXCAVATION OF A MESOLITHIC ROCK-SHELTER AT TENMALAI, DISTRICT QUILON.— P. Rajendran, U.G.C. Research Associate of the Deccan College, Postgraduate and Research Institute, Pune, excavated two trenches T_2 and T_3 inside the rock-shelter and found mesolithic implements and wood charcoal stratified in primary context in a deposit of 35cm thickness. The wood charcoal from the depths 35cm and 20-35cm have been dated by the Birbal Sahni Institute of Palaeobotany, Lucknow, to (BS-630) 5210 ±110 B.P. and (BS-646) 4420±110 B.P. respectively. Now, in all, there are three C^{14} dates for the Tenmalai site. The Mesolithic industries in Kerala are nongeometric, aceramic and non-metallic, and similar characteristics have been noticed all over south India, especially along the coasts.

MADHYA PRADESH

41. EXPLORATION IN DISTRICT BASTAR.— Keeping in view the two phased programme *i.e.* (1) survey of the submersion area in the Indrawati River valley and the (2) survey of tribal art and archaeology in District Bastar, a team consisting of C. Krishna assisted by O.P. Misra, Salimuddin and S.S. Yadav of the Department of Archaeology and Museums, Madhya Pradesh, conducted the survey at the Chitrakot, Matnar, Bhhodghat and Katrus I. All these dams proposed by the Madhya Pradesh Electricity Board, Jagadalpur Division fall in the valley of Indrawati covering the tehsils of Jagadalpur, Bilaspur and Dantewada. Most of the monuments protected by the Central Government are in the proposed submersion area.

Stone Age implements were found at Chitrakot, Rajpur, Barsur, Tumsar and Bhopal Patnam. Medieval Naga, Somvamsi, and Kakatiya group of temples and sculptures mostly in ruins were found located at Chitrakot, Chhindgaon, Kursipal, Jagadalpur, Narayanpal, Mundgaon, Dharaur, Bairamgarh, Singhanpur, Bersu, Nagapani and Dantewara.

42. EXPLORATION IN DISTRICT BETUL.— C. Krishna and Rajaramsingh of Department of Ar chaeology and Museums, Madhya Pradesh, conducted a survey of Betul area for collection of

material on tribal art and archaeology. A good number of sculptures belonging to Pratihara, Rashtrakuta and Paramara periods were collected.

43. EXPLORATION AT TALA, DISTRICT BILASPUR.— The Registering Officer, Bilaspur of the Department of Archaeology and Museums, Madhya Pradesh, exposed the remains of a ruined temple called Jethani temple. The unearthed temple has a large, simple but typical plan.

Amongst antiquities mention may be made of silver coin of Prasannmatra Sarabhpuriya king of Dakshina Kosala, copper coin of Ratna Deva, Kalachuri king of Dakshina Kosala, iron objects like arrowhead, spearhead, sickle, fish-hook, terracotta objects and pieces of sculptures. From the river bank, microliths were also picked up.

44. EXCAVATION AT KHAJURAHO, DISTRICT CHHATARPUR.— The excavation was resumed under the guidance of H.K.Narain, assisted by V.N. Gupta, A.K. Pandey, P.K. Mishra, P.K. Mukherjee, J.K. Patnaik, D.K. Lokhande, N.S. Pawar, R.K. Srivastava and D.K. Kasbi of the Bhopal Circle of the Survey with a view to ascertaining the extension of platform and brick structures. The excavation revealed that the uneven surface of bedrock was levelled with well-levigated black soil mixed with stone-flakes and brickbats for the foundation of the superstructure.

Stone architectural fragments were noticed in heaps at the four corners of the platform and one heap in the centre. Thus, it can be concluded that the temple might have been *panchayatana,* though no complete structure was found. The heaps included decorated/plain stone architectural fragments, pedestals of images etc. A *chandrasila* was also found in disturbed position.

The brick platform was found extending on the northern side. It was rectangular in shape. During excavation it was observed that the whole platform was built with brick and mud mortar and no filling was used for this purpose. It was reinforced by clay filling.

The most important discovery was the remains of a subsidiary shrine dedicated to Mahisasuramardini on the western slope of the mound.

Among the important antiquities unearthed mention may be made of Vamana figure, a door-jamb bearing Yamuna figure, decorated pillars with floral designs and *ghatapallava* motifs, a female figure with folded hands, Mahisasuramardini figure in relief. Apart from these many other antiquities including images, pedestals, decorated pillars, *chandrasila,* etc. were also unearthed.

45. EXPLORATION IN DISTRICT DHAR.— In continuation of last year's exploration *(1984-85* p.40) Jeeban Kumar Patnaik of the Bhopal Circle of the Survey explored hundred and two villages in the district in the course of village-to-village survey. The sites where antiquarian remains were noticed are listed below.

Tehsil	*Village/Site*	*Antiquarian Remains*
Dhar	Ahu	Mound about 4m high from adjoining surface

Tehsil	*Village I Site*	*Antiquarian Remains*
		containing microliths, pieces of iron bangles, bones, ashes, wood and grey ware, ruins of brick structure and Brahmanical images in mutilated condition of Paramara period.
Dhar	Ali	Ruins of medieval temple and mosque
-do-	Anteri	Medieval *baoli*
-do--	Bagaria	Siva temple and two buildings of late medieval period
-do-	Bakankhera	Medieval *baoli*
-do-	Beggar	Stone *baoli* of medieval period
-do-	Bhilkunda	Hanuman figure of 2m height of Paramara period
-do-	Bijur	Remains of a Siva temple and inscription
-do-	Chiklia	Medieval well with *Siva-linga* and Ganesa figure inside and an inscription
-do-	Dedla	Six wells of late medieval period and a thirteenth century Sanskrit inscription
-do-	Dherbardi	Ruins of Brahmanical temple of medieval period along with fragmentary sculptures and inscription
-do-	Dilaora	Ruins of a Brahmanical temple along with fragmentary sculpture of medieval period
-do-	Jirapur	Ruins of a Brahmanical temple along with a large number of mutilated sculptures of Paramara period, a *baoli* and Jaina sculptures
-do-	Khakheri	Medieval images of Ganesa, *nandi* and Hanuman
-do-	Kunda	Ruins of medieval Jaina Temple
-do-	Labraoda	Medieval well having a Ganesa figure fixed in the inside wall along with two inscriptions one in Sanskrit and the other in Persian
-do-	Manosravar	Brahmanical sculptures of Paramara period
-do-	Nandankhera	Mound
-do-	Negpur	Fragmentary Brahmanical sculptures of medieval period
-do-	Salkhanpur	Three Medieval wells
-do-	Sindora	Anthropomorphic figure and a *Varaha* of Paramara period(?)

Tehsil	*Village/Site*	*Antiquarian Remains*
Dhar	Sultanpur	Rock-shelter with microliths, remains of Siva Temple and Ganesa figure of Paramara period and remains of brick wall and terracotta objects
-do-	Talwara	Ruins of medieval temples and *sati* pillar
-do-	Tisgaon	Medieval *baoli*
-do-	Tornod	Medieval well
-do-	Umarpura	Medieval *baoli, Siva-linga* and *nandi* figure in mutilated condition
Sardarpur	Mendha	Brahmanical sculptures of Paramara period
Sharampuri	Jahangirpura	Ruins of medieval buildings
-do-	Masidpura	Ruins of a medieval Brahmanical temple

46. EXPLORATIONS IN DISTRICT GUNA.— Under the scheme of the Rajghat Survey, the area covering roughly 40 sq.km from Lalipur to Mangawali on either banks and valley of lower Betwa was surveyed by the team of the Department of Archaeology and Museums, Madhya Pradesh, Bhopal under C.Krishna assisted by V. Joshi and O.P. Mishra.

The exploration yielded Stone Age sites at Badera Kanwanpur, Dimroli, Katakera, Niwarkheda, Tanda and Toda Basi. The sculptures of Pratihara and Kachhapagatha art at Pancham Nagar, Sirsod, Ban Sona Umariya, Laheri, Kannaota, Bhattiya, Ghurisia, Dimroli, ancient *baoli* and inscription at Ban, royal palace of Bundelas at Panchananagar and Jain sculptures and temple remains at Laden, Tanda and Ghorapahad were noticed.

47. EXPLORATION IN THE NARMADA VALLEY IN DISTRICTS HOSHANGABAD AND NARSINGHPUR.— V.N.Misra, G.L.Badam, R.KGanjoo, Salahuddin, S.Alam, V.G.Sathe and L.K Mishra of the Deccan College Postgraduate and Research Institute, Pune, conducted exploration in the valleys of the river Narmada and its tributaries and also excavations at Devakachar in district Narsinghpur. The aim of this field work was to understand the geo- and bio-stratigraphy of the Quaternary sediments of the Narmada valley and to locate and investigate primary Stone Age sites.

The team visited the site of Hathnora, 40 km upstream of Hoshangabad from where a hominid skull cap was found 1982. The stratigraphy near the hominid site along the right bank of the Narmada is as follows :

Humus layer	0-1.5m
Yellowish clay, fissured and silty at the base	1.5-6.5m
------sharp contact----	
Loose pebbly/cobbly sandy unit unimbricated coarse sandy matrix clast supported, occurs in lense Middle Paleolithic tools and fossils	6.5-8.0m

—sharp contact-	
Brownish Fissured clay - pedal structure, diffused carbonate, specks of manganese (?), fine greyish sand in fissures and more sandy and silty at the base	8.0- 10.0m
—sharp contact ----	
Loose sandy-pebbly unit, subangular gravels of jasper, quartzite and quartz, matrix supported, cross-bedded and highly indurated at the base. Burrows/root marks at the top of the indurated surface. Hominid bearing stratum and Acheulian tools	10.0-13.0m
------sharp contact ----	
Yellowish medium grained sand with cross-bedding	13.0-14.5m

river water level

Acheulian artefacts in both fresh and rolled condition made on quartzite along with fragmentary fossils of *Bos* sp. were collected from the hominid bearing stratum. Middle paleolithic artefacts made on quartzite and chalcedonic silica in fresh as well as rolled condition and comprising flakes, blades, cores, side scrapers and denticulates were collected along with fossils of *Bos* sp. and turtle from loose pebbly/cobbly sandy unit capping the hominid bearing layer.

At Rampura about 62km west of Narsinghpur (along the Jabalpur - Sagar Highway) the following stratigraphy was noticed:

Humus layer	0-1.5m
Yellowish silty clay	1.5-7.5m
-------sharp contact-----	
Loose sandy pebbly gravel, cross bedded, well-imbricated and matrix supported, deeply weathered	7.5-10.0m
---------- grading ----------	
Unimbricated, matrix supported, rounded to sub - rounded pebbly-cobbly unit (in lense)	10.0-ll.0m
---------- grading ----------	
Cemented sandy- pebbly unit	11.0-13.0m
——sharp contact	
Reddish brown sandy silt	13.0-14.0m

river water level

The sandy pebbly gravel is red in colour due to the leaching of iron. It was found to be unusually rich in fresh Acheulian artefact. Made on fine-grained quartzite, the artefacts comprised of amorphous and discodial cores, flakes, symmetrical cleavers, handaxes and various types of scrapers. An excavation at the site will clarify the nature of the Acheulian industry.

Our main work was concentratmed in the valleys of the rivers Sher and Varurewa, both southerly tributaries of the Narmada, around Devakachar village, 10km north of Narsingh-pur. The composite stratigraphy in the area is as under :

Humus layer	0-1.5m
Yellowish silty clay, finely laminated with specks of dark medium grained sand cross and trough bedded	1.5- 7.0m
------sharp contacts------	
Loose greyish cross bedded sandy gravely unit, moderately indurated and rarely trough bedded	7.0-17.0m
------grading --------------	
Indurated cross bedded sandy gravelly unit	17.0-20.0m
------sharp contact-------	
Red greasy clay	20.0-22.0m

river water level

The localities of Belghat and Guarighat on the river Sher and of Talayaghat on the Varurewa were found to be extremely rich in mammalian fossils. These occur in fairly unrolled and undamaged condition. Their horizon is principally the loose grey gravelly sand. These sand are also rich in some places in small-sized tools like flakes, blades, side and end scrapers mostly made on chalcedonic silica but occasionally also on quartzite. From the base of this unit a very thin cleaver made on andesite and in a fresh condition was found. To ascertain the precise nature of the stone tool industry and the fossils, two small digs were carried out — one at Guarighat on the river Sher and the other at Talayaghat on the Varurewa.

In both cases the digging was done in the tool and fossil bearing gravelly sand. At Guarighat a trench measuring 4 x 6m was dug to a depth of 6m. The stratigraphy revealed by the excavation is as follows:

Fissured clay	0-1.17m
Loose coarse grained sand showing cross bedding, climbing ripples and occasionally gravels	1.17-4.85m
--------- grading -------	
Indurated coarse gravelly sand with gravels of agate, jasper, chert, calcrete and sandstone	4.85-4.99m

------sharp contact -------	
Yellow clay	4.99-5.95m

A total of three hundred and eighty-four artefacts were recovered. They are made almost entirely of chalcedonic silica and are slightly to heavily rolled, clearly showing the secondary nature of the archaeological horizon. The assemblage comprises Levallois as well as ordinary flakes, blades, side and end scrapers, denticulates and discoidal and simple cores. Associated fossils include those of *Bos* sp. and *Crocodylus* sp. In terms of typology and size of the tools the assemblage represents a Late Middle Palaeolithic to Upper Palaeolithic stage.

Talayaghat locality is the richest in fossils. Although fossils of *Bos* sp., *Equus* sp., antelope, crocodile and turtle were found at the site, it was specially rich in hippos fossils. Both known varieties of fossil hippo namely, *Hexaprotodon namadicus* and *H. palaeindicus* are found. The stratigraphy revealed at Talayaghat is :

Loose coarse grained yellowish sand with lenses of laminated clay (organic rich) and fissured clay	0-2.0m
sharp contact -------------	
Loose pebbly sand with gravels of quartz, andesite, agate etc.	2.0-2.5m
------------ grading ---------------	
Loose medium to coarse grained sand with bands of dark greyish gravels	2.5-6.23m

The artifacts and fossils were collected between 2.0-2.5m depth. The artefacts are prepared on chalcedonic silica and comprise end flakes, side flakes, thick blades, scrapers and cores. The assemblage represents Middle Palaeolithic culture. The artefacts are moderately rolled.

48. EXPLORATION IN DISTRICT HOSHANGABAD.— P.K. Mishra of the Bhopal Circle of the Survey explored ten villages under the Narmada Valley Submergence Scheme. The sites where antiquarian remains were noticed are listed below:

Tehsil	*Village I Site*	*Antiquarian remains*
Harda	Handia	Brahmanical temple and few other Indo-Islamic monuments, Mounds containing black-polished, black and red and red slipped wares
Harda	Khedineema	An extensive mound 15m high containing Stone Age tools and pottery of late historical period

Tehsil	*Village/Site*	*Antiquarian remains*
Harda	Sigon	Stone Age tools made on quartzite like Acheulean handaxes etc. showing signs of factory site

49. EXCAVATION AT SARANGPUR, DISTRICT RAJGARH.— A small-scale excavation by C. Krishna, assisted by Rajaram Singh, Om Prakash Mishra, Vinod Joshi and S.L. Soni of the Department of Archaeology and Museums, Madhya Pradesh, was carried out at Sarangpur.

Three trenches SRP I (8 x 7m), SRP II (7 x 6m) and SRP HI (20x3m) were laid at the Gadi or Gandhi Teela, situated on the right bank of the river Kali Sindh, a tributary of the main river Chambal.

The following is the schematic section and details of finds from the correlated trenches.

SRP I	*SRP II*	*SRP III*	*Historical Period*	*Cultural assemblage*
(1)	(1)	(1)	Muslim-Maratha	Humus finds include copper coins, medieval painted and glazed pottery, iron objects, beads, sculptures and architectural remains
2 & 3	2 & 3	2& 3	Paramara	pottery, sculpture, plan of *stupa* and Red Polished ware
Not Dug	4 to 11	4 to 6	Gupta and Kshatrapa	Silver coins, terracotta sealings, painted and impressed pottery, iron and copper objects, structure, burials, terracotta animal figurines and red polished ware
	12 to 15		Naga and Kushana	Copper coins, painted slate, stone and Balarama image
	16 to 17	8	Sunga and Sata-vahana	Copper coins, slate stone plaques plaques and painted ware
	18		Mauryan	Northern Black Polished Ware, copper and iron objects
	Not dug	10	Janapada	

50. EXPLORATION IN DISTRICT REWA.— P.K. Mishra of the Bhopal Circle of the Survey explored thirty-two villages in course of village-to-village survey and noticed the following sites having archaeological importance:

Tehsil	*Village I Site*	*Antiquarian remains*
Teonthar	Baretikalan	Mound with ruins of a fortress of historical period
-do-	Banpura	Ruins of a medieval temple and fragmentary sculptures
-do-	Jhar	Historical mound containing late Gupta pottery
-do-	Khabra Khurd	A historical mound surrounded by rampart wall of mud mixed with stone containing historical pottery
-do-	Lohgarh	A mound with Gupta pottery
-do-	Saluja Kalan	Fortress with five gateways and few Brah-manical sculptures with ruins of a temple of tenth-eleventh century AD
-do-	Sivapur	Ruins of Siva temple along with *Siva-linga* on *yonipatta* and few other fragmentary sculptures of medieval period

51. EXPLORATION AT MAIHAR, DISTRICT SATNA.— Jai Narain and R.P. Tripathi of Allahabad University explored Maihar and located a few Lower Palaeolithic localities. These localities yielded handaxes, cleavers, scrapers and cores and flakes on quartzite (pl. XTV).

52. EXPLORATION IN DISTRICT RAISEN.— P.K. Mukherjee of the Bhopal Circle of the Survey explored twenty villages in the course of Village-to-Village Survey. The sites where antiquarian remains were noticed are listed below:

Tehsil	*Village I Site*	*Antiquarian remains*
Basoda	Guptha	Rock-shelters with microliths
-do-	Kabulpur	Rock-shelters painted with red, white and black colours
-do-	Maser	Rock-shelters with microliths
Vidisha	Berkhedi	Historical mound with fragmentary sculptures and *sati* pillars
-do-	Dhanora	Mound containing microliths and *sati* pillar
-do-	Gahukhedi	Brahmanical sculptures and microliths

Tehsil	*Village I Site*	*Antiquarian remains*
-do--do	Katsara	Historical mound and *sati* pillar
-	Sothis	Historical mound with mutilated Brahmanical sculptures
-do--do	Tilakhedi	Historical mound containing red ware and *sati* pillar
-	Veerajpur	Ruins of medieval structure

MAHARASHTRA

53. EXPLORATION IN DISTRICT AHMEDNAGAR.— In the course of village-to-village Survey in Kopargaon taluk, S.S. Parekh of Aurangabad Circle of the Survey noticed following antiquarian remains:

Village I Site	*Antiquarian remains*
Chas	Late medieval gateway, ruins of two temples with loose sculptures of Brahma, Vishnu and *nandi* of late medieval period
Ekaruke	Temple of Vajresvari (eighteenth century AD), stepped well and ruins of late-medieval fort
Morvis	Moreshwar temple of Siva with an inscription of late medieval period on the lintel of the door
Nimbgaon	A gate of fortification (eighteenth century AD), single storeyed residential building of Dhengle Sardar of Peshwas and *pan-chmukha Siva-linga* (eighteenth century AD)
Pimpalwadi	Ruined gate of a late medieval fortification with two bastions and hero stone
Pimplas	*Haveli* or residential building of three storeys belonging to the Maratha period and stepped well with two platforms Ruined
Rohale	*Haveli,* sculpture of Vishnu (fifteenth century AD) and stepped well
Sakuri	Architectural members of a ruined medieval temple

54. EXCAVATION AT DAULATABAD, DISTRICT AURANGABAD.— In continuation of the excavations conducted last year *(1984-85,* p. 51), Aurangabad Circle of the Survey carried out excavations under the direction of C.L. Suri, assisted by P.N. Kamble, B.R. Mani, S.K. Joshi, M.R. Dhekane, Ajit Kumar, M. Mahadevaiah, S.S. Parekh, D.N. Sinha, D.T. Asar, D.L. Sirdeshpande, R.D. Ingle, G.L. Gaikwad and V.Y. Songirkar in the extensive residential area of medieval period, located near Bharatmata Temple, to the south of the Elephant

tank inside the Daulatabad fort with a view to obtain a detailed picture of the culture and settlement pattern.

The work was carried out in as many as 14 trenches, laid on grid system, each having an area of 5 X 5 metres.

With reference to structural pattern, the lower sub-phase got rough workmanship in random rubble masonry and mud-mortar was used as binding material, but in the upper sub-phase better dressed stones were also noticed and sometimes lime-mortar was also found used as binding material. Among exposed structures, a house plan was noticed with a hall having underground cell flanked by a room in east and another in west and a hall in the south. The ceiling of the underground cell (3.04 X 1.15 X 1.04m) was in arcuate system, as it can be inferred from the shape of the side walls. In another house complex, a kitchen was noticed with grinding stones, quern and pestle inside. Plinths of small rooms were found at the north-western fringe of the mound. Roof tiles were .noticed and architectural members of Yadava period were found reused.

While removing the baulks and clearing the floor level of trench B.3 exposed last year, a gold coin of Yadava period (?) was found. Other minor antiquities included twenty-five copper coins, mostly with Arabic-Persian letters, 2 copper seals, copper finger rings and number of household objects in copper as well in iron like nails, arrowheads, door latches, hooks, dumbbell, amulet, knife-blades, chains and terracottas including female torso, animal figurines, human head with hat, lamps, stone lamps, male figure in stone, large number of glass bangles, glass, terracotta and semiprecious stone beads, besides thin pottery, Chinese porcelain ware (one with Chinese letters), Celadon wares, local glazed and other common types of medieval period ceramics.

55. EXCAVATION AT DAULATABAD, DISTRICT AURANGABAD.— The Deccan College Post-graduate and Research Institute, Pune, in continuation of the work of earlier years *(1984-85,* p.51), conducted excavations at Daulatabad under M.S. Mate, assisted by Kamal Chavan, R.B. Sapre and C.G. Padval.

In keeping with the broad objectives of the investigations the entire area south of the Bharatmata temple was undertaken for clearance and excavations. As the first step towards isolating house-blocks of the latest phase, all the streets and lanes were cleared and exposed. A street connecting a small gate in the Kala Kota to the inner of the two ramparts of the inner fort was exposed in full. Its length was 470m and its width varies from 4.50m to 3.50m. Going across it in the north-south direction another street of the same width was exposed to a length of 110m. Several other lanes and cross lanes were marked out and partially cleared.

The houses were built of rubble stone in dry or lime-mortar masonry and have outer walls as much as 1.50m thick. In some cases space was left vacant in between two houses. One such house-block was partially excavated and it yielded some stone sculptures and portions of the *sikhara* of a temple built in the *Bhumija* style of the thirteenth century AD. It had on the *chaitya toranas* of the *ratha,* seated images of *tirthankaras*, indicating the original dedication of the temple.

Among the minor antiquities recovered from these operations mention may be made of a large number of iron arrowheads and sherds of Celadon ware.

56. EXPLORATION IN DISTRICT BHANDARA.— Under the direction of B.P. Bopardikar assisted by N.G. Nikoshey, J.S. Dubey and N.K. Nimje of Prehistory Branch the Survey carried out exploration along the rivers Wainganga and Ambhora and located the following Stone Age and historical sites:

Site	*Cultural assemblage*
Ambhorakhurd	Early Stone Age
Bela	Middle Stone Age
Itgaon	Middle Stone Age
Jamgaon	Early and Middle Stone Age
Khabri	Late Stone Age
Maundi	Middle Stone Age
Mohdura	Middle Stone Age
Nawegaon	Middle Stone Age
Sitepar	Historical
Tekepur	Medieval

57. EXPLORATION IN DISTRICT NAGPUR.— In the course of exploration of the submergence area of lower Wunna Irrigation Project, M. Mahadevaiah of Aurangabad Circle of the Survey noticed middle palaeolithic sites at Dhudhala and Jaipur in Nagpur taluk and Borgaon, Kursapur, Kawdapur, Ridhora (Motha) and Salai Rani in Umred taluk.

58. EXCAVATION AT THARSA, DISTRICT NAGPUR.— The Department of Ancient Indian History, Culture and Archaeology, Nagpur University, conducted excavation at Tharsa, under the direction of Ajay Mitra Shastri assisted by Chandra Shekhar Gupta and Kellellu Ismail. The ancient mound with an approximate height of 6m is situated just on the left bank of the river, and is presently occupied by the village Tharsa, some 42km north-east of Nagpur and about 7km south-west of Tharsa Railway Station on the Bombay-Howrah line.

The limited excavation conducted on the western slope of the mound revealed an habi-tational deposit of about 0.85m divisible into four occupational layers belonging to the Megalithic culture betraying some affinities with the Chalcolithic culture.

Layer 1, which forms the topsoil of the recently ploughed field, comprised loose greyish soil, sand and *kankary* patches. This layer yielded mixed pottery.

Layer 2, comprising slightly compact greyish soil, revealed brisk human activity repre-sented by successive floor levels with their thickness ranging between 5 and 15cm. The floors seem to have been made up of *murrum,* cow dung and lime compactly laid on the black cotton soil soling. In all the three excavated quadrants the floors were found to have been thoroughly

burnt excepting in one quadrant where four charred posts betrayed a circular house plan. The few stray post-holes noticed in the burnt floor patches and the other two quadrants did not show any definite house plan. However, a large number of burnt earth clods with reed or bamboo impressions do indicate that the walls were constructed with the help of bamboo reeds and/or tender branches of trees which were closely knit and finally plastered mostly with mud but sometimes mixed with cow dung and lime.

Another interesting feature encountered on the top of this layer was a group of four circular platform-like structures arranged in two rows, with their diameter ranging between 1.00 and 1.05m. These structures were made of well-rammed *kankary* sand. They were so compact that they could withstand a considerable weight. The fact that the tops of these platforms did not bear any burnt marks suggests that they probably belonged to the upper stratum which, as mentioned above, was very much disturbed.

The pottery included black ware, Black-and-Red ware, red ware, micaceous red ware and black-painted red ware. All these wares included slipped and unslipped varieties. The common types included bowls, dishes, *lotas* and vases. Two ill-baked handmade miniature red ware lotus one of them having red ochre coating externally, were noteworthy finds. The paintings were done in black, and rarely in violet on red slipped surface. A few Black-and-Red ware sherds also bore paintings externally. The painted designs included vertical and oblique strokes, horizontal bands followed by slanting lines in groups, hatched diamonds framed in horizontal lines, etc. In most of the cases the rims of the vases were decorated with groups of vertical or oblique lines on both internal and external sides. However, painted pottery in this level was very meagre. Other minor antiquities from this layer included a nail and an oval ring fastener in iron; small figure of a hooded cobra in copper; considerably good number of terracotta beads; hopscotches in terracotta and stone; and bone points.

Layer 3, comprising slightly loose black cotton soil, did not yield any trace of human activity. It is just possible that this entire deposit may be the soling of the earliest floor of the subsequent layer.

Layer 4 was significant in more than one respects. Although a little thinner than the subsequent layers, it yielded a large number of painted sherds.

The pottery types in painted red ware included small vases, bowls and *lotas,* the painted designs being the same as those found on the painted pottery recovered from layer 2. The Black-and-Red ware types included bowls and dishes. Red ware and micaceous red ware represented very meagrely in this layer, included only the vases of different sizes. The antiquities included terracotta hopscotches and beads.

The most significant finds at the site were the urn burials. So far this is the only site in Vidarbha which has yielded urn burials similar to those found elsewhere in the Chalcolithic context. Both the urns, which are in blotchy red ware with flared rim, wide mouth and globular body, were buried in pits dug into the natural soil by the earliest settlers at the site. Both the urns contained badly damaged post-excarnated skeletal remains of infants. In one of the urns the skeletal remains were found kept in the Black-and-Red ware bowl along with a thin copper ring. It is interesting to note that both the urns were given soot coating externally up to the shoulder and internally only at the bottom. One of the urns, kept horizontally in the

pit, was covered with an invertedly kept thick red ware basin, while the other, kept vertically in the pit, was covered with an invertedly kept black slipped ware dish.

Thus, the urn burials and the house plans having bin platforms (so far no house that has been found in the megalithic context in Vidarbha contains this sort of bin platforms), which form some of the typical features of the Chalcolithic culture, and a few new types in the painted ware which are different from the common types found elsewhere in the context of burial and habitational sites of the megalithic culture - all go to suggest the fact that the megalithic culture at Tharsa did have some affinities with the Deccan chalcolithic culture during the latter's last phases.

59. EXPLORATION IN DISTRICT NANDED.— Ajit Kumar of Aurangabad Circle of the Survey, during the course of exploration of the submergence area of Lendi Major Irrigation Project, noticed antiquarian remains (pl.XV) at following villages of Mukher taluk:

Village/Site	*Cultural assemblage*
Bharaswari	Middle Palaeolithic tools
Bhatapur	Middle Palaeolithic tools and microliths
Bhendegaon (Buzurg)	Middle Palaeolithic tools
Bhendegaon (Khurd)	Middle Palaeolithic tools
Bhingoli	Middle Palaeolithic tools and fossil of a molluscan shell embedded in a middle palaeolithic tool on chert
Hasnal	Middle Palaeolithic tools
Kolnur	Middle Palaeolithic tools and megalithic stone circles
Marajwari	Middle Palaeolithic tools and medieval temple datable to twelfth-thirteenth century
Mukramabad (Kharka)	Middle Palaeolithic tools and medieval temple datable to twelfth-thirteenth century
Kolanki	Middle Palaeolithic tools
Rawangaon	Middle Palaeolithic tools, early historical pottery and loose medieval sculptures

60. EXCAVATION AT WALKI, DISTRICT PUNE.— M.K. Dhavalikar and Vasant Shinde with the assistance from Shubhangana Atre, Y.S. Rasar, V.G.Vishwasrao and Sunil Jadhav of Deccan College, Postgraduate and Research Institute, Pune, excavated Walki, a small village on the right bank of the river Bhima near its confluence with the Mula. The ancient site is situated about 2.5km to the north of the village, in the reserved forest. The cultural debris, at its maximum, is about 60cm thick. The site has been disturbed along the northern side because of erosion. It was occupied, only by the Early Jorwe people in the latter half of the second millennium BC.

This season's work brought to light fifty-four houses, fifty-two of the late structural phase,

sealed by layer 1 and two of the earlier structural phase, sealed by layer 2. In the former group there were forty-five round huts and nine rectangular houses. The average diameter of the former ranges between 2.50 to 3.50m. The rectangular houses were quite spacious (5.30 X 4.15m); the largest of them being 11.10 X 4.15m. The round huts have been observed to form distinct cluster consists of about five to six huts, among which one is a large round mud platform. It is usually without post-holes suggesting that it was open to sky; it may have been used as a threshing floor (pl. XVI). A couple of huts in each cluster have extremely rough and uneven floor which indicates that they were probably meant for keeping animals like sheep and goat during night. One or two huts have a slightly better floor with post-holes along the periphery and they can therefore, be said to have been occupied by people. Besides this there is a round mud platform for storage bin and a fire place in the open in each cluster.

In the central part of the mound, the large rectangular houses (pi. XVII) are characterized by flimsy floors. They had low mud walls with wattle and daub structure above; the thatched roof was supported on wooden posts. They did not have hearths worth the name, but all the same have yielded antiquities such as beads, fish-hooks and even a fragment of a mid ribbed dagger of copper. All these houses are well planned with their longer axis in the east-west direction; they recall to the mind similar arrangement at Inamgaon.

The conspicuous absence of grains from the site only suggests that the people did not make flour of barley or any other cereal which they cultivated but may have just simply crushed the cereal by soaking in water and boiled it. Even today the villagers make a gruel of either wheat or jowar and eat it by adding some salt to it.

This settlement as the stratigraphical evidence shows, was a seasonal encampment which was occupied only for a few decades. The probable reason for deserting it appears to be a large scale fire which destroyed many of the rectangular houses in the central part of the habitation.

ORISSA

61. EXPLORATION IN DISTRICT CUTTACK.— J.S. Nigam assisted by A. Jha of the Excavation Branch IV of the Survey explored Bhavanipur which is known for a Siva temple assignable to seventh-eighth century AD. From a low mound only a few potsherds were collected, representing coarse dull red ware and grey ware. The shapes met are vases and *handis.* Kolangiri was a Buddhist site situated on a hill top. No structural remains were seen on the surface, however, a few brick-bats on the mound suggest structural activity. On the southern side of the hillock a flight of about twenty rock-cut steps are seen. A few fragmentary Buddhist stone sculptures are lying on the south-western top of the hill. The pottery was not seen on the surface, but was available on the southern slope of the hill. The pottery included red ware with slipped variety and grey ware. The shapes were bowls, lid-cum-bowls, dishes, basins, *handis,* vases and storage jars. Besides a tubular spout, a few decorated sherds were also found. Other finds included fragments of terracotta tiles, a stone pestle and fragments of soapstone. The site can be dated between ninth-tenth century AD. Rameshwar is near the Birupa river on the granitic outcrop which is presently being quarried for ballast and *murrum.*

A few brick-bats were noticed on the surface of the hillock, the concentration was on the southern slope where from the pottery was also collected. Pottery included red, buff, and grey wares. The shapes met with were bowls, dishes, basins, *handis,* vases, jars and a ring-stand (?). The site may be dated between ninth-tenth century AD. Lalitgiri was re-explored before the excavation. A few potsherds were extracted from the previously excavated sections of the trenches dug by the Department of Archaeology, Government of Orissa and Utkal University.The pottery shapes met were bowls, lid-cum-bowls, dish, *handis,* vases, jars and a solitary upper portion of a sprinkler. The sprinkler and the dish fragment in the collection were important. The sprinklers of this type are dated between first-fifth century AD while the dish is analogous to the dishes found with N.B.P. ware. These two types enhance the date of the site which hitherto is assigned to seventh-eighth century AD.

62. EXPLORATION IN BUDHA RIVER VALLEY, DISTRICT CUTTACK.— In the course of their exploration in the Budha river valley, a tributary of the Baitarani, Amarendra Nath of Excavation Branch IV of the Survey, B.K. Rath of the Department of Archaeology, Government of Orissa and A.K. Mishra and N.K. Behera of the Geological Survey of India, Bhubaneswar, noticed an early historical site at Namitigiri and P.S. Jajpur, District Cuttack. The cultural deposit, as seen in the river section, was about 3 metre in height and roughly 100m in length. A flood deposit of light yellow clay was seen overlying the cultural deposit. Besides, reasonable number of black-and-red ware sherds, a good number of red (with or without slip) and grey ware sherds were picked up from the cutting. Several fragments of lids in red ware having typical ledge and flanged waist helped to date the site to *circa* first century BC.

Other finds from the site included a seated male figure with stretched legs and a male bust with *usnisa* produced out of single mould; to interpret the latter as Bodhisattva requires further opinion. A mother and child torso done in applique technique had ill-proportioned breasts. A fluted cylindrical bead a broken ear-stud with concentric circles and hop-scotch having mat-impression and a stone pestle were some of the important antiquities collected from the site.

63 EXCAVATION AT LALITGIRI, DISTRICT CUTTACK.— To investigate the antiquarian wealth of the Buddhist site at Lalitagiri and to find out the relationship of the site already excavated, *G.C.* Chauley, assisted by B.V. Rao, K.V. Rao, A. Palanival, K. Srimani and S.K Ganguly of the Bhubaneswar Circle of the Survey undertook excavation work on a hemispherical mound which appeared like the remains of a stupa (on the northern side of hill top behind the sculpture shed) which was not much disturbed by any agency in the past. Four trenches A_1 A_2Bj,B_2, comprising of sixteen quadrants measuring 4 x 4m were laid so that the central sections intersect at the stupa. The excavation revealed that the stupa was constructed on the hillock without any elaborate foundation. The stupa which is 15m in diameter at the base is made of random rubble masonry and then veneered with finely dressed sand stone following the curvature of the dome as well as the drum portion (pl. XVIII). The dome is also covered by a rectangular slab with a square hole, possibly the base of the *harmika* which was used to support the *chhatra* or canopy. Fragments of a *harmika* were found during the excavation.

Further it was revealed that the veneering was done subsequently with finely dressed sandstone slabs without any interlocking. The stupa has a ledge of 1.20m at a height of 1.30m from the floor level. From the ledge rises the drum of the hemispherical portion. The base of the stupa also brought to light the remains of a well paved circular stone flooring *(pradaksh-inapatha)* 3m in width, running around the stupa. The outer edge of the flooring is marked by a course of raised stones 10cm above the floor level.

Another epoch making discovery is the relic caskets (pl. XIXA) not reported from any other site in Orissa. The location of three relic caskets on the south, east and north was 2m above the floor and adjacent to its edge of the stupa. They are designed in the form of votive stupas with detachable upper part. One of the caskets, the one placed on the south does not contain any relic. The other two khondalite caskets contain within each a steatite, a silver and a gold casket placed one inside other. The gold caskets contain the relics in the shape of small piece of bone (pl. XIXB). The excavation has also yielded grey and red ware of medium to fine fabric. The stupa's drum (diameter 13m) indicates that it must have a height of 8m or more above the ground level. Since it contains relics of Buddha, it might be the same stupa noticed by Hiuen-Tsang.

64. EXCAVATION AT UDAIGIRI, DISTRICT CUTTACK.— The Excavations Branch IV of the Survey under the direction of J.S. Nigam, assisted by A. Jha, P. Biswas, P.N. Biswas and M.P. Singh carried out excavation at the Buddhist site with a view to expose the stupa and the adjacent monastic establishment.

Udaigiri is situated 102km north-east from Bhubaneswar in a valley surrounded by Assia hills on the west, south and north and open land in the east reaching the bank of the river Birupa. The horseshoe shaped valley is vertically divided into two halves by a ridge. The southern half has the remains of several stupas and a monastery. The excavation was confined to the northern half of the valley. The brick built stupa visible from a distance was in dilapidated condition and covered by its own debris. The entire area including both the stupas and the monastery was covered by vegetation. After cleaning the area was divided into several squares of 10m each in the grid-pattern. The retaining wall of the circumambulatory passage on the east was partly visible. Similarly the central halls *(chaitya)* had also been dug as suggested by a deep depression on the monastery mound.

The stupa has four courses of roughly dressed blocks of sandstone and three brick courses in the foundation. Square on plan, it roughly measures 10m on each side. A floor of gravel mixed with lateritic soil was laid, traces of which were noticed. This floor extended upto the boundary wall, the foundations of which were exposed on the west and north-east. The floor must have been used as circumambulatory passage. The space between the boundary-cum-retaining wall and the stupa was filled with packing of rubble stone and earth. The drum of the stupa had a wide horizontal band of moulding and several bands obtained by insets and offsets of the bricks. Above the mouldings on all the four sides in the middle are the pillared inset niches, each enshrined with a seated stone sculpture of Dhyani Buddha. Thus on the east is Akshobhya, on the south is Ratnasambhava, on the west is Amitabha and on the north is Vak (pl. XX). Each sculpture on the top is inscribed with Buddhist creed in Sanskrit language

and Brahmi characters of tenth century AD reading *ye dharma hetu prabhav hetu teshama tathagato hya avadata teshama, c yo nirodho avam vadi - mahashramanah:* The dome of the stupa was damaged and hence only its core was available which was packing of bricks and brick-bats of assorted size and earth. No part of the *harmika* or *chhatravali* was found at the site. A few patches of lime plaster were noticed during the excavation on the moulding and the pillars indicating that the stupa was lime plastered.

Outside the stupa complex on the west was exposed a rectangular brick platform measuring 2.50 x 1.10m. It may have been used for sitting by the pilgrims.

The monastery is situated on the north-west of the stupa towards the hill. It is rectangular on plan and was partly exposed. The eastern limit of the monastery was known by the enclosure wall which was exposed in the north-east. It has five courses in the foundation and being on slope towards north has one extra course of brick to bring it to level (pl.XXI). On the south three arms of a cell were partly available. The rest of it seems to have been washed away by rain-water being on the slope. Adjacent to it towards north is a wall which has partly survived. The traces of the boundary wall have not survived at this end. On the southern side the enclosure wall running east-west has been exposed. Its western end has not been reached. It is 2.25m thick and has been traced to a length of 9.57m. It has survived to a height of 2.40m and has four courses of brick in the foundation. It originally had a 1.80m wide door-opening which was closed at a subsequent stage. The door led to an open passage and on its both the sides, were possibly several cells. One such cell which has been exposed on the west has (partly survived) brick paved floor. In the same cell there is a brick platform oriented east-west which may have been used for sleeping by the monk. The cells were provided with a door as two depressions on the stone slab on the bottom suggest to have served as sockets for the door-leaves. A rectangular stone pillar standing *in situ* measuring 2.1 X 0.47m X 0.37m was presumably one of the series as the top of one such pillar is seen on the surface of the mound in the same alignment. These stone pillars by the side of the passage indicate that they supported a verandah. Towards north of the passage running east-west is another cell which was partly exposed. It had an opening towards west which was subsequently closed by blocking the same by brick. It indicates that this cell had originally two door openings. Inside the cell a lot of burnt earth and ash was found and even the brick-paved floor of the cell was blackish indicating that the cell was burnt.

In the area within the monastery, indications of three stone sculptures were seen on the surface. Two of them being headless are of standing Aparajita and sitting Avalokiteshvara and the third is that of Jambhala which is damaged at right leg.

Three other stone sculptures were discovered outside the monastery beyond the mound on the north and north-east respectively. Two of them are unfinished standing Buddha images and the third recovered under the roots of a banyan tree is a sitting Ratnasambhava. The petals of lotus seat bear inscribed Buddhist creed similar to those mentioned above.

Pottery has been found in the monastic area. The bulk of it consists of grey or blackish ware, red ware is lesser in quantity. It is coarse to medium and the shapes met with are bowls, dishes with one or two ridges in the centre, *handis,* basins, vases, jars and a type of sprinkler with a strap handle. This type of sprinkler is often seen held in the contemporary Buddhist

sculptures. Other finds include a terracotta stamped plaque bearing Buddhist creed, the type commonly recovered from several Buddhist sites. A few iron nails were found suggesting that these were used in the wooden frames. The stupa and the monastery may be assigned to ninth-tenth century AD.

65. EXPLORATION IN DISTRICT PURI.— With a view to ascertain the ancient track between Dhauli (District Puri) to Jaugada (District Ganjam), Amarendra Nath of the Excavation Branch IV of the Survey and B.K.Rath of the Department of Archaeology, Governmen of Orissa, in the course of their exploration discovered a protohistoric site and some historical sites.

The protohistoric site at Golabai (also recorded as Golabaisasan) on the left bank of the Malaguni (also known as Mandagini, etymologically perhaps, signifies Madakini of Himalaya origin) a tributary of the Daya, is in the Khurda sub-division. On the river side periphery of the mound an out-of-plumb temple, of *rekha* order, dedicated to Jaleswara Mahadeva assigned to *circa* thirteenth century serves as upper datum line for the site. The mound has callously been cut across for thoroughfare which now serves as an index to site. In the upper levels some dry ashlar laterite masonry work can be seen whereas in the central part of the cutting three successive floors at an interval of over 50cm are embedded. Besides number of worked bone pieces, a broken neolithic celt alongwith black and red ware sherds, some having post-firing ochre red painting, have also been picked up. The painted designs met with are chequered-pattern and a series of oblique strokes arranged in a row. Such pottery find in the protohistoric context is known from elsewhere but in Orissa it is first site of its kind.

Two sites viz. Aragarh and Kurkimundia have remains of stone railing pillars. Both the sites are located on isolated hill tops on the Daya river, however the former is in the Delang P.S. and the latter is in Pipili P.S. Whether or not these railing pillars had any coping stone was not known from the available remains on these sites. However, sculptural remains assigns a date to *circa* eleventh century AD. The dull grey and red ware sherds yielded from these sites also suggest this date.

Some rock-cut caves consisted of tiny cells opening either directly into the verandah or the space in front, use cut near the top of the ledge of the hillock locally known as Gangapahar near village Kaya in P.S. Jankia of Tehsil Khurda. These cells are austerely plain and so narrow that one cannot even stand or stretch oneself. At the higher contour lies a group of cells encircled by a large elliptical verandah which has postholes at the threshold to support wooden super-structure. Rock-cut benches have also been noticed in this complex. These rock-cut cells may be compared with the one seen in Dhauli hills near Bhubaneswar, therefore, the cells at Gangapahar may not be later than the seventh century AD, as at former place a Bhaumakara inscription has been noticed. However, at latter place a late Oriya inscription records the donation of one Deva Samanta of Golabaisasan, a village in the vicinity.

66. EXPLORATION IN DISTRICT PURI.— D.R. Pradhan of the Department of Archaeology, Orissa explored the following sites of archaeological interest:

Ranpur: In the former State of Ranpur numerous antiquities were found at different

places. Mention may be made of about two Jaina images, one of Risbhanatha (50 X 29cm) and the other of Neminatha (50 X 30cm) both are of grey chlorite and may be assigned to ninth century AD. The Risabhanatha is now worshipped by the local people as Siva. The image is inside the Swapneswar Mahadev temple. The Neminatha, another *Tirthankara* is in the Chandeswar Siva temple, fixed in the southern niche and worshipped as *parsva-devata.*

Aragarh: Aragarh Mandir is situated on the right hand side of the railway line towards Puri approchable via Jatni about 30km from Bhubaneswar. On the hill top large number of Buddhist remains were noticed. Not only the remains of a great stupa was traceable but also a beautiful temple which is double storeyed. The first floor is structural whereas ground floor is rock-cut. The entrance of the first floor is very narrow. In the lintel an inscription in Sailodhava characters is found. The temple is flat-roofed. The ground floor is rock-cut and it is bi-chambered. It is called "Siddha-Gumpha" by the local people. The remains of a stupa in form of a mound can be seen. Five numbers of votive stupas made of sandstone were also noticed near the stupa mound. The antiquities found in the place are four numbers of Buddhist railing, an image of Tara and a broken Buddhist image (pedestal portion clearly visible).

Balanga: This village is approachable by a motorable road from Satasnakha and is about 40km from Bhubaneswar. The local people informed about the existence of temple in the river bed of the Bhargavi itself, which was evident from the large blocks of stone, most of which are carved.

Narasinghpur-hat: This village is about 2km from Nayahat. Few years back the villagers recovered an image of Madhava (Vishnu) from a barren field while digging for agricultural purposes. The beautiful black chlorite stone of Madhava was in perfect state of preservation. It is more than 2.20m in height and can be assigned to eleventh-twelfth century AD. Now it is under worship. Another important image is that of an eight-armed Chamunda in dancing pose which is also under worship. It would be datable to tenth-eleventh century AD. The *parsva-devatas* are Ganesa, Parvati and Chamunda, all have been collected from the adjacent areas and fixed in the niches. These images would be also datable to eleventh-twelfth century AD.

Bharada-Patana: This village is approachable via Nayahat and Narsingnhpur-hat. From Narsinghpur-hat one has to go either by foot or by cycle after crossing the river Prachi. Two beautiful Buddhist images of Buddha in *bhumisparsamudra* and Tara in *lalitasana* were noticed. Both are made of sandstone. The people worship these images in the name of 'Risi'.

After crossing the village inside the Thakurani temple, the presiding deity is ten-armed. Probably this Durga is the largest Durga image so far noticed in the Prachi river valley. The date would be tenth century AD. The images of Ajaikapada-Bhairava and Ganesa both of sandstone were also noticed.

Kalikabadi: The village Kalikabadi is in the Brahmagiri block. In the village of Kalikabadi, a temple named Arjuneswara is situated. The *jagmohana* of the temple is completely broken. The temple is fully plastered probably due to the saline climate, but carvings inside are visible in those parts of the temple where plaster has got decayed. In front of the temple there is a loose sculpture of Astika-Jagatguru (local name is Savitri-Satyaban) datable to *circa* ninth

century AD. The peculiarity of the temple is that in the *mastaka* portion a Hanumana figure is clearly visible. As the name of the temple is Arjuneswara, the Hanumana might have been placed according to the Mahabharata story.

In the backside of the Arjuneswara temple a small temple with the presiding deity Kali was noticed. The image is standing on a corpse and is dated to twelfth century AD.

PUNJAB

67. EXCAVATION AT SANOHOI., DISTRICT LUDHIANA.— The Excavation Branch II of the Survey in collaboration with the Department of Cultural Affairs, Archaeology and Museums, Government of Punjab, under the over-all direction of C. Margabandhu assisted by G.S. Gaur, K.K. Sharma, L.S. Mamani, S.K. Sharma, B.B. Sharma, R.S. Srivastava, V.R. Sharma, Shyam Lai and D.D. Dogra of the Branch and G.B. Sharma alongwith K.K. Rishi, Kuldip Singh Sidhu, Gurdev Singh and Hira Singh of the Punjab Government undertook excavations at Sanghol. The season's work had three objectives to realize: first, to lay bare a part of the Kushan township at the Hathiwara mound by horizontal digging for town planning and other structural features; secondly, to confirm the existence of overlap between the Bara and the Painted Grey Ware cultures; and lastly, to locate any other stupa in the vicinity. For the first objective, trenches were laid mainly on the north-western part of the Hathiwara mound SGL-1, for the second, the already excavated area at SGL-2 was extended and for the third, a few trenches were laid at SGL-11.

The excavations at SGL-1 yielded a single culture sequence of the Sunga-Kushan deposits extending to an average height of 6m above the natural soil. This was represented by an exclusively red ware industry. Amongst the more important types, mention may be made of bowls with incurved rims, large storage jars, button-knobbed lids, sprinklers, basins and miniature vases. The use of stamped and incised decorations was remarkable. The motifs included *svastika, triratna,* leaves, flowers, loops, circles and other geometric combinations. The habitational strata showed five structural phases (pl. XXII) of which the upper two were largely rebuilt of used material and followed more or less the earlier plan. The houses were largely made of burnt bricks of the sizes 33 X 21 X 7cm, 30 X 20 X 5cm and 23 X 15 X 6cm. The houses of the early two phases were made of mud bricks. An intermediary stage of mud and burnt bricks being used simultaneously was also noticed. As to the lay-out of this period, the houses were not oriented along the cardinal directions. The largest wall probably of a palace complex measured 14.10m in length and 0.68m in height with 13 courses exposed so far. Mention may also be made of a platform which measured over 4.30m in length, 3.25m in width and 0.68m in height without being completely traced. With a core of brick bats, it had a niche of complete bricks of which 4 courses are visible. The very pronounced feature noticed here is the presence of robbed brick walls particularly in upper two phases; the topmost phase being completely destroyed. Several hearths of various sizes and shapes, namely, circular, elongated and rectangular were found. These hearths appear to have been used for purposes of cooking as well as for manufacturing such as bead-making etc.

The excavations brought to light lanes and sub-lanes running along the houses. Whether the settlement was open or fortified still remains to be ascertained. However, the surface indications are suggestive of the presence of the defences.

Four-fold cultural sequence as reported from SGL-2 earlier and given below was confirmed here.

Period I	Bara Culture
Period II	Painted Grey Ware Culture
Period III	Black slipped
Period IV	Sunga-Kushan

Period I was characterized by the typical Bara pottery with two structural phases represented by pise walls. Important pottery shapes included jars with collared, beaked or beaded rim or splayed mouth, large lota-shaped vase, squat dish-on-stand, storage trough, jar with ring base and bowl-like lid with or without central knob.

Period II was represented by Painted Grey Ware and its associated red ware alongwith Bara pottery. A hearth with burnt clay lining was also found.

In Period III, Grey ware of the Painted Grey Ware lineage and black slipped ware were found.

Period IV belongs to the Kushan times and is marked by typical red ware industry. Four structural phases were unearthed. A pre-Kushan structure built of burnt as well as mud bricks was also exposed. A noticeable feature with regard to structures is that the closely-built houses are smaller in dimensions in comparison to those at SGL-1 (citadel). The houses are made of burnt as well as mud bricks. Typical red polished ware including associated red ware of the Gupta period was collected from pits, thereby suggesting habitation of this period in near by locality.

The SGL-9 is the highest area of the mound having 18m thick habitational strata, out of which 10.59m was excavated during this season exposing two periods i.e. Kushan and Recent. In the Kushan period, four structural phases were noticed. The structures were made of mud bricks at the lowest level and of burnt bricks in all upper phases. The brick size here is 33 X 24 X 6cm. A workshop represented by a row of hearths was also exposed. The material of Gupta period was found mainly in pits. Period II is of recent times and its habitation was disturbed during partition times. Indian *her (zizyphus jujuba)* have been found from a kitchen-cum-store of the Kushan times.

The excavations at SGL-10 revealed in this part of the mound hitherto unreported Bara culture showing two structural phases represented by mud walls. The total habitational deposit of this culture was roughly 2.90m. It yielded typical Bara pottery in all its manifestations. This habitational deposit was sealed by thick sterile layer consisting of silt and fine clay over which were the Kushan deposits of about 3m thickness having two structural phases represented by mud and burnt brick walls. The uppermost phase was almost completely destroyed by the modern Muslim graveyard.

A structural complex comprising of a small stupa having two circles with inner diameters of l.45m and 3.70m with eight spokes and a monastery on all the three sides of the former was brought to light SGL-11 (pl. XXIII). This being a non-habitational site has not yielded much pottery and antiquities.

So far as the antiquities are concerned mention may be made of terracotta figurines (pl.XXIV), beads, pendants, gamesman, weights, balance, rattle, toy cart-frame, and wheels; semi-precious stones; miscellaneous objects of ivory, bone and shell, copper and iron; numerous seals and sealings bearing inscriptions in Brahmi mainly and Kharoshthi; coin moulds of schist slate and terracotta and dice of bone, ivory (pl. XXV) and terracotta. Copper coins were also found in abundance belonging to Indo-Parthian, Kushan and Huna rulers. The shell industry was represented by finished and unfinished beads, bangles, pendants etc., most of them made during the Kushan Period.

The most important find of the season is an inscription in ink written in concentric fashion on the interior of a late Kushan bowl. On palaeographical considerations, this is datable to *circa* second-third century AD. Another important discovery is a terracotta conch bespeaking of the culmination reached in the technique involved in the making of the conch by a highly skilled potter of the time. One can still play it. the sound of which perfectly resembles with that of the natural shell conch. Ivory comb recalling the one from Taxila is also noteworthy.

RAJASTHAN

68. EXPLORATION IN DISTRICT BHARATPUR.— D.N. Dimri of Jaipur Circle of the Survey in the course of his exploration discovered the following sites of archaeological interest:

Taluk	*Village I site*	*Cultural assemblage*
Wair	Aironda	Historical
-do-	Alipur	Lower Palaeolithic
-do-	Babekher	Early historical
-do-	Beri	Historical
-do-	Bhesana	Historical
-do-	Bhusawar	Historical
-do	Halena Bewer	Historical
-do-	Hatijar	Historical
-do-	Itamda Ataripur	Historical
Wair	Jatpur	Historical
-do-	Kamalpur	Historical
-do-	Luhasa	Early historical
-do-	Moodiya Jat	Historical
-do-	Moodiya-Lalita	Early historical
-do-	Mukhena	Historical

Taluk	*Village/site*	*Cultural assemblage*
Wair	Newari	Historical
-do-	Raj-Garh	Early historical
-do-	Randhirgarh	Early historical
-do-	Targwa	Historical

TAMIL NADU

69. EXCAVATION AT AUROVILLE, DISTRICT SOUTH ARCOT.— In continuation of last year's work *(1984-85,* p. 77) the Madras Circle of the Survey, under the direction of P. Narayanababu, assisted by K.K. Ramamurthi, D. Dayalan, M.S.R.K. Prasad, T. Elumalai, R. Manickam and M. Elumalai resumed excavations at the megalithic site at Auroville, the international township situated about 15km north-west of Pondicherry with a view to assessing archaeological importance in all aspects. The excavations revealed following types of megalithic burials.

Urn-burial with stone circle: This type of burial consisted of circle of limestone boulders with cairns also of limestone. In the centre a granite capstone measuring 2(EW) X .70m(NS) was exposed to view already. Further probing at the site revealed that just below the capstone was a circular pit, with a diameter of 1.45m cut into the hard laterite soil to a depth of 1.40m. The pit consisted of a huge urn and pieces of sarcophagus besides black and red ware pottery. The urn was probably covered with a lid. The lid and the upper part of the urn were highly damaged. The urn is oval in shape with a small mouth and decorated with a design of applique type on its shoulder. It was found to be devoid of any skeletal remains or iron objects but consisted of only three bowls and a lid made of black ware. The remains of urn burial as well as the sarcophagus indicate that there was activity twice in the pit, first for placing sarcophagus and second for the urn burial.

Urn-burial without stone appendage: Situated to the east of type 1, this urn was kept inside a pit cut into the hard laterite soil. The urn is of coarse thick hand-made variety with cord decoration on the shoulder portion. The grave goods inside the urn constituted a black and red ware jar with globular body and elongated neck and sherds of black and red ware of indeterminate shapes. An iron axe was noticed very near to the urn within the pit.

Cist burial with urn: An intact burial was also exposed to view during this season. An oval shaped pit with a depth of 2.40m and a dianfeter of approximately 1.50m oriented north to south was found covered by a massive granite capstone but broken subsequently. The capstone was noticed 0.20m below the present surface level. Inside the pit at a depth of 1.10m a huge orthostat measuring 1.20 x 1.00m with an urn burial towards the east was noticed. The pit was subsequently filled with gravel, limestone rubble and sandy earth. The pit also yielded iron objects and pottery at different levels. The ceramic appendage was comparatively intact in the lower levels. The urn exposed on the eastern side is 0.80m in height and handmade with a coarse thick texture. It has an oval-shaped body having a narrow mouth and

pedunculated bottom and decorated with thumb impression at its shoulders. Inside the urn four pots of black-and-red ware and a lid of polished black ware besides iron objects like axe, knives, sword with mid-rib and fragment of sword were encountered. This burial too did not have any skeletal remains.

Cairn circles: This burial consisted of a circle of limestone boulders with cairn packing. In the centre a capstone covering a circular pit was encountered at a depth of 1.35m. The burial did not yield any remains of urn or ceramic appendage and appears to have been totally disturbed.

Plain urn-burials: Three pot burials were noticed. The first one consisted of a pyriform urn covered with a lid in black and red ware, second one having two red ware pots kept mouth-to-mouth horizontally and third one containing two red ware pots kept one over the other. Each of them consisted of two small bowls of black-and-red ware. No iron objects were encountered.

The ceramic evidence encountered from the excavation comprises typical megalithic black ware, red ware and black-and-red ware. The shapes were bowls, flat dishes, pots etc. As far as the antiquities were concerned, iron objects like knives, swords with mid-rib sickles, axe, spearhead are worth mentioning.

70. EXCAVATION AT DARASURAM, DISTRICT THANJAVUR.— P. Narayanababu assisted by K.K. Ramamurthi, G.S. Narasimhan, D. Dayalan, M. Elumalai, V.T. Chandy, Ramkumar Lochab, Vinayagam and Palani of the Madras Circle of the Survey undertook the excavations in the open elevated area between the inner and outer *gopuras* of the Airavatesvara temple at Darasuram in order to know the presence of any buried structures beneath. The excavation revealed interestingly a huge rectangular stone basement measuring 15.5(NS) X ll.5m(EW). The excavation has also brought to light the remains of a new brick structures the nature of which could be ascertained after the whole area is excavated. The original entrance stone pavement of the Chola period was also exposed in the western *gopura.*

UTTAR PRADESH

71. EXCAVATION AT FATEHPUR SIKRI, DISTRICT AGRA.- In continuation of last year's work *(1984-85,* pp.83-85), excavation was resumed under the joint collaboration of the Survey and Aligarh Muslim University with a view to (i) tracing out the minor Haramsara, (ii) exposing house complexes of nobles and men of high rank and (iii) ascertaining the link between the royal palaces and the residential complexes on the western side. The work was directed by S.S. Biswas with the assistance of R. Saran, P.B.S. Sengar, G.A. Qamar, C.P. Singh, S. Singh, S.K. Jain, B.B. Sur, C. Lai, Y.K. Sharma, Sultan Singh and N.P. Srivastava of the Agra Circle of the Survey.

Excavation was carried out at the site (F.P.S.I.) extending westward from the western enclosure wall of Birbal House-Camel's stable complex. A *kharanja* pathway which is a later addition, running from south to north, from Badshahi Darwaza to Hathi Pol, divides the site into two parts. Very close and west of the *kharanja* pathway and near the north-eastern corner of the enclosure of Abul Fazl and Faizi Houses stands Hammam of Abul Fazal.

Excavation conducted in the eastern part of the site between the *kharanja* pathway and the western encompassing wall of Camel's stable brought to light a narrow gallery and a residential complex consisting of a large hypostyle hall and a spacious courtyard, surrounded by seven rooms. The gallery, 2 metres wide, with rammed-earth floor, runs parallel to the northern boundary wall of the residential complex. It is an extension of the gallery running from the royal palaces. It once connected the royal palace to the residential complex now exposed. The hypostyle hall (20.25 X 6.60m) was enclosed on the east by the western wall of Camel's stable and on the north by the northern wall of the gallery. Bases of pillars discovered *in situ* show that hypostyle hall had 18 pillars disposed in 6 rows, 3 pillars in each, thus forming five openings (1.50m wide) facing the courtyard. Later on, all openings were closed except one for entry to the hall. The northern wing of the hall was transformed into a room (6.60 X 4.95m) with an entrance (1.30m wide) opening to the west. Walls of the room have niches (1.20 and 0.55m wide). Stone slabs and beams found at the place confirm that flat roof stone slabs covered the room. From the patches of lime plaster left on walls of the hall it could be inferred that they were plastered with lime. Original floor of the hall was made up with lime and *kankar,* but, later on, a layer of lime mortar was laid out to raise the floor to the height of 10cm.

Fragments of tiles were found in abundance in the excavation at the hall. Holes found at regular intervals at the frieze of the back wall of the hall were most likely holding rafters to carry on slanting roof of tiles. Stone slabs unearthed at the place suggest that the slanting roof was, later on, converted into flat roof of stone slabs. In the aforesaid constructions two structural phases are noticed, one is marked by the extension of the gallery and the hypostyle hall with slanting roof of tiles and the other is represented by the conversion of the slanting roof into the flat roof, the closing of openings of the hall and the raising of its floor.

Seven rooms surrounding the courtyard were exposed. They were rectangular in plan and had entrances opening on to the courtyard. Two rooms (6.6 X 3.65m each), abutting on the northern enclosing wall of the courtyard and interconnected through a narrow opening, had one entrance (1.55m wide). Another set of two rooms (3.90 X 3.25m and 9.80 X 3.20m) was standing adjoining the western boundary wall of the courtyard. They were also interconnected by an opening (1.20m wide) in the partition wall. The larger room had an entrance (1.30m wide). Three rooms, in a row, abutting on the northern wall of the gallery, were also interconnected. The central room (5.30 X 3.50m) had two entrances (1.30m and 1.10m wide). The room (1.85 X 2.85m) on the west side was used as a kitchen, confirmed by ash and charcoal unearthed at the place.

The room (3.10 X 2.50m) on the east side had also an entrance. At the east side of this room, a dwarf wall was exposed. A passage, emanating from the gallery and sloped down towards north, was running along the dwarf wall and leading to the spacious courtyard. A large gateway incorporated in the northern boundary wall of the courtyard, which was the main entrance to this complex, was laid bare. A platform (7.50 X 6.90 X 0.35m) made of lime and *kankar* edged with stone pavement was exposed in the courtyard in front of the northern rooms. Three large broken earthen jars were found lying buried at the south-west corner of

the courtyard. Nearby another platform made of reused stone slabs with an outlet, was unearthed. From an underground drain plastered with lime found 40cm below the platform one may infer that the platform was used as a bathing place or as a place for cleaning utensils. A set of two rooms was laid bare outside of this house complex, which were abutting on its northern wall. One of them (6.30 X 3.25m) with an entrance at the north was found in good condition. These rooms most likely served the function of a guard house attached to this complex. A large oven was found lying buried in a small apartment of undressed stones, outside of this complex near the north-eastern corner of the enclosure. It is certainly a later addition. An open water channel, made of lime and *kankar* was exposed outside of the complex; it is running from north to south adjoining the western enclosure wall of the complex.

Excavation in other part of the site around Hammam of Abul Fazal revealed dwindled and hidden parts. Two rooms were exposed at the east side of the Hammam, one being octagonal and other rectangular (6.85 X 3.65m). Walls of the rectangular one have niches identical in shape and dimension. Two rectangular platforms one superimposed on the other, and two large rooms attached with toilets were exposed at the northern side of the Hammam. The lower platform had a flight of steps to approach the superimposed one (7.60 X 3.30m). Attached to the lower platform a circular cistern was encountered. Platforms and cistern are made up of lime and *kankar* and overlaid with a thin layer of fine lime. Adjoining the lower platform a narrow rectangular room was laid bare. Two rooms (8.00 X 5.00m and 7.60 X 5.00m) exposed to the west of platforms are interconnected through an opening (1.20m wide) in the partition wall. Floors of rooms were made up with lime and kankar and coated with a thin layer of fine lime plaster to produce smooth surface. Walls, which have niches, were plastered with lime and embellished with a border (1.00m wide) painted in red at the height of one metre from the ground. The larger room has two alcoves (1.95m wide) manipulated in the body of the southern wall. It has three entrances (each 1.30m wide), the side ones were, later on, closed, which indicates that the structure was reoccupied after its abandonment.

A few trenches were laid out to the north of Hammam of Abul Fazal at a distance of 50 metres, which exposed a part of a house complex and outlines of a courtyard between Hammam of Abul Fazal and house complex. The eastern side of the courtyard was margined with a border paved with stone slabs. The part of the house complex unearthed consists of a central room (5.00 X 3.60m) surrounded by nine rooms partly exposed, which are interconnected and openings are provided with stone sills and jambs. Walls of central rooms are plastered with lime and they have niches. The northern and southern walls were decorated with paintings executed in red on white background. Thickness of walls varies from 1 to 1.6m and that of plaster from 3 to 9cm. Floors are made of lime and *kankar* and overlaid with a thin layer of fine lime plaster that produced smooth surfaces.

During excavations ceramics were found in abundance, which comprise porcelain, red ware and glazed pottery. Some sherds of porcelain bear Chinese inscriptions. Common shapes are vases, large dishes, bowls, large storage jars, inkpots and chilams. Other antiquities include a gold foil (pl. XXVI), silver ornaments, copper coins, rings, nails, chisels, spears and arrowheads and copper and glass bangles.

72. EXCAVATION AT FATEHPUR SIKRI, DISTRICT AGRA.— In continuation of last year's work *(1984-85,* pp. 80-83) R.C. Gaur, assisted by J.M. Siddiqui, K.K. Mohammed, Anis Alvi, S. Husam Haider, Shami Alam, O.P. Srivastav, Gulam Mujtaba, Mohammed Abid, Zahid Hashmi, Q.S. Usmani and Tahir Ali Khan of Aligarh Muslim University resumed excavation at Fatehpur Sikri under the collaborative National Excavation project of the Survey and the University. The work was concentrated in the area west of Samosa Mahal, north of Jami Masjid, part of which had been exposed last year. The evidences obtained so far, suggest that the area under excavation was part of the Royal Harem complex.

This year's excavation revealed an entrance gate, nine rooms, two semi-covered pavilions, a garden, two underground cells, a tank and three water channels. A staggered entrance *(deorhi),* with a width of 1.50m and multiple turnings has been provided to foil any attempt to look into the complex, on the north-east side, through the existing Samosa Mahal. On the north side where the entrance passage terminates, there is a small triangular room which by its location and size bespeak a function, not different from a guard room. Between this room and the standing Hammam, there is a rectangular room measuring 5.25 X 3.80m to the north of the latrines excavated last year is a room with a flight of steps with three jars embedded, two on one side and one on the other for storage of water. The drain of the latrine is connected to another room where the night soil is collected and removed manually. A covered passage has been provided exclusively for the movement of the scavenger. Adjacent to this towards the east is another room measuring 6.50 X 3.80m, the walls of which are sunk with six niches.

The semi-covered pavilion on the south east side, measuring 7.75 X 6.65m has two entrances of 1.10m each. The celing of this pavilion was supported by pillars at a distance from the northern wall of the room. This room has dado paintings in black, flanked by red lines. The remains suggest that originally the whole room was beautified with it. Just behind this there is another room measuring 4.50 X 4.50m with two entrances of 2.50m each. Beautiful floral motifs painted in red colour run throughout the lower part of this room. The antechamber made against the southern boundary wall of the complex is a small room of 4.60 X2.15m. The above mentioned pavilion, room and ante-chamber are made of fine ashlar masonry with 5 cm thick plaster. Its layout, method of construction with the decorative elements prove it to be a deluxe structure of the complex. It is probable that this portion might have been used for social gatherings and other festivities of the house.

In the southern centre of the complex is a big water tank and a fountain measuring 7.70 X 7.70 X 2.10m. A platform supported by squat pillars, 70cm above the floor of the tank is running throughout. On the north and east, the continuity of the platform is broken to provide arches to support the flight of steps intended for access to the tank. Adjacent to it, a *tahkhana* with two entrances, one in the east and the other in the north and a number of skyholes make it a favourable resort during the summer. The cells have been decorated with beautiful paintings. Nearby another double storeyed *tahkhana* has also been exposed. In front of this underground cell a water channel runs, punctuated by shallow water pools at regular intervals. East of it, two water channels and pools at two levels link the main residential part with the garden and Hawa mahal.

In the south-west corner a rectangular room in two split levels, the upper one measuring

3.25 X 1.30m and the lower one 5.13 X 3.25m have been exposed. Spaces have been provided in the walls with sunken niches. This room opens into a semi-covered pavilion, which is divided into two with three arches.

A thick wall runs behind it towards south-north to form a bastion with a diameter of 5.50m. On the east side, in front of the residential portion is an ornamental garden, divided into six parts with walkways made of rubble stones and the whole have been knitted into one single harmonious whole with an octagonal tank. Some trenches were also laid out, outside the Samosa Mahal complex towards north. A circular room with a diameter of 5.50m was excavated; access to the top of it has been provided by a flight of steps. A further probing made in the area, north of *hauz-i-shirin* adjacent to the stable excavated last year revealed one open pavilion and three rooms.

As usual the pottery of the year included Chinese, glazed, red, grey and buff wares. Noteworthy antiquities are iron nails, clamps, horse-shoes and terracotta objects.

73. EXPLORATION IN THE BELAN VALLEY, DISTRICT ALLAHABAD.— B.B. Misra and M.C. Gupta of the Department of Ancient History, Culture and Archoeolay, University of Allahabad conducted exploration in the Belan Valley and brought to light quaternary deposit exposed over a long distance along the right bank of the river in Neodhia Bayalis locality about 9km down stream from Baraundha and 14km up stream from Deoghat. In the geological section the following formations were noticed.

Mottled clay: In the bottom this formation was partly exposed (about 2m in thickness). It corresponds to silt-I overlaying the Cemented Gravel-I of the sections of the Belan system.
Cemented Gravel-II: Resting on the above formation; it measures about 3.5m in thickness.
Red Clay: It is full of *kankars* and measures about 4 m.
Gravel-III: About lm in thickness, it rests on the red silt. In this locality it is full of shells.
Browmish and Blackish clay: This post-Gravel-III deposit resembles Gravel IV, traces of which were noticed at Mahagara. It rests on the black clay deposit. *Whitish clay:* About 2, m in thickness this rests on the IVth Gravel.

During the investigation a few Lower and Middle Palaeolithic tools and animal fossils were also picked up. Lower Palaeolithic tools comprised handaxe, cleavers, scrapers and choppers, while Middle Palaeolithic artifacts included side and round scrapers, points and flakes.

An extensive Chalcolithic-cum-early Iron Age settlement was also discovered to the south of Neodhia Bayalis village. The mound is almost oblong on plan, measuring about 300m from east to west and 200m from north to south. It has maximum height of 3.5 m. Collections from the site include pottery (both Chalcolithic and Early Iron Age), animal bones, querns, mullers, stone balls and a few microliths.

74. EXCAVATION AT KHAJURI (PUNCHOH), BELAN VALLEY, DISTRICT ALLAHABAD.— B.B. Misra with the assistance of Kamalakar Thakur of the Department of Ancient History, Culture and Ar chaeology, University of Allahabad, conducted excavation at the site of Khajuri, located on the right bank of the river Belan near its junction with Khajuri Nala about 80 kilometres from

Allahabad in east and south eastern direction. The site measuring.about 244m from north to south and 213m from east to west is irregular, oblong in shape. Materials, picked up from the site, belonged to different cultural periods ranging from Neolithic through Chalcolithic-Megalithic (Koldihawa Culture) to Early Iron Age (Kotia Megalithic).

A trench (F-l) measuring 5 X 5m was laid out almost in the centre of the mound. Excavation in F-la (western half portion of trench F-l) was suspended at the depth of 75 cm after exposing an occupation floor in layer 4. Further deep digging was carried out only in eastern half portion (F-lb) of the trench upto a depth of 2.30m. Total habitational deposit of 2.20 m comprising 10 layers is divisible into two cultural periods - Chalcolithic (Koldihawa culture) and Early Iron Age (Kotia culture).

Period I belonging to Chalcolithic (Koldihawa culture) was 1.20m thick deposit comprising layers 10 to 5. Layer 4 about 20cm in thickness represents the transitional stage as is evident by the material recovered from it. Excavations revealed three regular floor levels of period I, each in layers 6, 7 and 9. These floors were littered with large number of pottery, animal bones, querns, mullers, stone pieces, burnt clay-lumps<some bearing bamboo and reed marks, stone and terracotta discs (weights?) of various sizes, microliths, bone arrow-heads, etc. On the floors of layer 7 on fire-place in the southern extremity and one post-hole on the eastern edge of the trench were also noticed. The floors are made of rammed earth, burnt clay and potsherds. Pottery of the period is generally wheel-thrown and comprised red ware of various shades. In red ware are generally utilitarian types consisting of bowls, dishes, vases, storage jars, basins, footed and perforated vessels, pans, lipped vessels, fragments of dish-on-stand, etc. Black slipped, grey and black-and-red wares account for mainly bowls and dishes.

The first settlers at the site used to live in huts made of wattle and daub as is suggested by the discovery of burnt clay pieces with reed and bamboo impressions and a few post-holes. They subsisted on agriculture, hunting and fishing. The bones, recovered from the deposit, belonged to both domesticated (cattle, sheep, goat) as well as wild animals (deer, pig, etc.) and aquatic creatures like fish, tortoise, etc. Of the antiquities mention may be made of microliths made on milky chalcedony and chert comprising retouched blades, parallel-sided blades, points, trapeze, triangle, borer, lunates, cores and flakes—some with crested ridge, bone arrowheads and points, beads of semi precious stones and terracotta, copper objects (ring and wires), stone, terracotta and pottery discs.

On the floor of transitional stage 4 two giant stone slabs along with other finds viz. querns and mullers, stone pieces of different sizes, beads, pot sherds, microliths, iron slag, ash, charcoal, etc. were found. A U-shaped hearth *(chullah)* was also found on this floor in the south eastern corner of the trench near one of the giant stone slabs. The purpose of the stone slabs lying on the floor is not known. However, some of them appear to have been used for seating purpose and for putting necessary domestic objects on them.

Period II (Early Iron Age Kotia culture): In layers 1 to 3 Kotia type of pottery comprising utilitarian red ware, thick grey/black and black-and-red wares were found. Some of the sherds bear incised decorations on their external surface. The pottery as assemblage on the whole is sturdy and well-baked, though the clay used was not well levigated and contains impurities-grits, stone pieces, etc. Some of the vessels, like carinated *handis,* pans, bear soot marks on

their base suggesting that these were used as cooking vessels. Among the principal shapes, mention may be made of shallow bowls-cum-dishes with flat/disc-base, carinated *handis,* knobbed lids, bowls or basin-shaped stoppers, basins, shallow dishes with beaded or rolled rim, medium-sized vases with grooved and incised rim, pan with lugged handles and large storage jars. People of this period too used to live in wattle and daub huts as is suggested by the discovery of burnt clay pieces with reed and bamboo-marks. They subsisted mainly on agriculture and animal domestication. However, hunting of wild animals and fishing were also practised to a certain extent. Deposit of this period yielded large number of animal bones (some with cut-marks) of cattle, sheep, goats, pigs, fish, tortoise, shells, rodent deers and birds. Rice appears to be the staple diet of the people.

Noteworthy finds include arrowheads, knife, nails of iron, beads of carnelian and agate, copper ring, querns, mullers and numerous iron slags.

It is interesting to note that almost all the layers of this period yielded *kauris* probably used in exchange. Barring a brick-paved floor noticed on the surface in the western end of the settlement, the excavation did not furnish any evidence of the use of burnt-bricks.

75. EXPLORATION IN DISTRICT ALLAHABAD.— Rama Kant Tripathi, a research scholar in the Department of Ancient History, Culture and Archaeology, University of Allahabad explored three sites, viz., Bara Pura, situated about 500m from Koraon, Samoli Pura on Lapri River and Kudara, all falling in Meja Sub-division of district Allahabad. The 'Kotia type' of pottery associated with Iron Age megalithic culture was found at these sites, besides a few animal bone fragments and other antiquities. The ceramic assemblage is red ware, black-and-red ware, black slipped ware and grey ware, both in thick and thin fabric. The main types were jars, bowls, pedestalled bowls, dishes and *handis.* The ceramic assemblage is devoid of painting but incised and stamped decorations have been found on a few pot sherds.

76. EXPLORATION IN DISTRICT ALMORA.— Kunwar Singh Negi of Regional Archaeological Unit, Almora, of the Department of Archaeology, Uttar Pradesh, discovered two ancient temple sites in Tehsil Ranikhet and Bageshwar. One of them is situated on the right bank of the Ram Ganga river near Masi which is locally known as Ram-Paduda-Mandir and belongs to the early medieval period. The other temple site is lying in the village of Chhani situated on Bageshwar-Takula motor road. Stone images namely Uma-Maheshvara, *Saptamatrika* panel, meditating Siva, four-handed seated deity and Lakshmi-Narayana belonging to *circa* tenth century AD to fourteenth century AD were also discovered.

77. EXCAVATION AT KHAIRADIH, DISTRICT BALLIA.— The Banaras Hindu University, under K.K. Sinha and Birendra Pratap Singh, assisted by Ravindra Kumar, S.C. Singh, K.P. Mishra and A.K. Mishra, resumed further excavations *(1983-84,* pp. 86-87). This year's work was under taken with a view to impart training to M.A. (Final) students of archaeology group and to delimit the settlement area of the earliest Period I. In accordance with the above objective, nine trenches were laid at different points of the mound.

The area occupied by these early settlers could not be determined due to extensive

disturbances in some trenches. Occurring in a decidedly pre-N.B.P. context, the Period I material had yielded 'Chirand' type painted black-and-red and black-slipped ware. Radio-carbon samples from early levels of this period would take back the antiquity of the site to *circa* 1000 BC.

The black burnished ware and cord-impressed pottery which were noted meager in previous year's work were recorded in a slightly improved frequency. Some shapes were also recovered in the former such as wide-mouthed vases with concave neck, pedastalled bowl, dish-on-stand, basins and bowls of varying profiles. The last three types were copied from black-and-red and red wares. Of the latter, bowls were the only type represented in it. Among the noteworthy shapes dish-on-stand was the new entrant in the black-and-red and black wares. The statistical study of the painted pottery of one of the trenches revealed that the painted sherds of black slipped ware outnumbered the painted black-and-red ware sherds.

Among the important finds, mention may be made of an arrowhead, points, a pendant of bone, beads of carnelian, agate, chert, chalcedony and disc-beads of steatite. Other objects included nine terracotta beads, the lower part of the these were generally decorated with oblique or vertical incised lines, a pendant (?), hopscotch, dabber and pottery-disc with single perforation.

It was noticed that the maximum expansion of the settlement at Khairadih was during the late phase of Period II datable to *circa* fourth century BC to second-first century BC. The use of an arecanut type bead of terracotta as a spindle was an outstanding find assignable to the late phase of Period II. In this example a thin circular rod of iron inserted in the arecanut bead was found intact. The use of arecanut type bead as spindle whorl had long been suspected. The Khairadih example confirms this assumption. Along other finds a miniature pendant of bone in the human form, terracotta female figurine made in Sunga style, animal figurines decorated with pierced dots and beads of semiprecious stone etc., are the noteworthy finds.

Period III levels were excavated in a limited area. Besides pottery, beads of semi precious stone, of which special mention may be made of thirty-six faceted beads of crystal, ear-stud of jasper and objects of terracotta such as cart-wheel exquisitely decorated, skin-rubber, a complete bracelet, toy-cart and animal and human figurines. The copper objects were represented by an armlet, bangles, fragmentary pieces of utensils, antimony rods, an almost complete specimen of toy-cart, etc.

78. EXCAVATION AT DARAU, DISTRICT BULANDSHAHAR.— R.C. Gaur, assisted by J.M. Siddiqui, K.K. Mohammed, Shami Alam, O:P. Srivastav, Husam Haider, G. Mujtaba, Mohd. Abid, Zahid Hashmi and Q.S. Usmani of Aligarh Muslim University laid out trenches at Darau on a mound popularly known as Sidhpur. The well-known Durgah of Chundhera lies on the other side of the river at a short distance.

To ascertain the cultural sequence, altogether seven trenches were exposed on different parts of the mound. The excavation revealed the cultural remains of the P.G.W. and N.B.P. The nuclear area of the P.G.W. and N.B.P. has been extensively disturbed by a large number of barns of British time. Subsequently the site was further dug out to take out earth to raise

the level of the main road along the bridge on the Kalinadi. This has disturbed the site so much, that we find the early P.G.W. scattered all over the surface and the medieval pottery some time down below. However, at places the early layers of the P.G.W. and the remains of Sunga and Kushan periods were found intact. Towards the western part of the mound, in a rain gully, a Kushan structure was exposed. As many as twelve courses were noticed, though the nature of the structure could not be determined.

The site is rich in grey ware as well as in black slipped ware with its varied shapes. A few pottery pieces from the lowest level of grey ware with reddish exterior and greyish interior, perhaps marks a transitional period and are noteworthy.

The excavation exposed two structural phases of post-P.G.W. level, out of it the latter one has a well compact mud floor with post holes. In the northern part of the river where the river washes the foot of the mound, the ground level has been raised by piling up the hard yellow compact clay, as a safeguard to the habitation, against the recurring calamity of the annual flood.

The excavation yielded a variety of antiquities, important among them being bone arrow-heads, iron spearheads, knife-handles, nails, terracotta animal figurines, gamesmen, wheels, beads and a seal in Brahmi characters.

79. EXCAVATION AT JAKHERA, DISTRICT ETAH.— The Department of History, Aligarh Muslim University, Aligarh, resumed the excavations under M.D.N. Sahi with the assistance of Naheed Khan, Rakesh Kumar, Saeedul Hasan, N.H. Zaidi, Anis Alvi, Zameer Ahmad, Ghulam Mujtaba and Ramjit.

The main aim of the excavation was to determine the cultural sequence of the second mound (JKH-2) and to expose horizontally house plans of the Painted Grey Ware people and to trace further in extent the ditch/channel of P.G.W. phase discovered during previous excavation at JKH-1 in the middle of the southern slope facing the river side *(1975-76,* pp.50-51).

In all six trenches measuring 10 x 10m were laid; two on JKH-1 and four on JKH-2. The significant discovery of this season was the occurrence of ochre coloured pottery in the lowest levels characterised by the hard yellowish calcareous alluvium, of both the mounds. In the upper levels of the same deposit O.C.P. was found mixed with tiny bits of black-and-red ware and black slipped ware. But the yield of pottery was very small in number and size. Since the deposit does not represent a regular habitational one, it appears that the actual habita-tional deposit belonging to the O.C.P. culture might be there in close proximity. From a similar deposit, O.C.P. sherds in large number were found at Lai Qila and Atranjikhera. It was just on the top of this deposit that habitational accumulation of the black-and-red ware people was found overlaid at JKH-1 in earlier excavation.

Thus the revised cultural sequence of the site would be:

Period I (?)	Characterised by O.C.P. in the lower levels and mixed with tiny sherds of black-and-red and black slipped ware in the upper levels of the same deposit.

Period II	Characterised by the occurrence of black-and-red, black slipped and red wares.
Period III A	Characterised by the introduction of painting in black pigment on black slipped, black-and-red and various hues of red ware and iron. Upper levels of this deposit yielded only a few pieces of Painted Grey Ware.
Period III B	Mature Painted Grey Ware period.
Period IV A	A co-occurrence of P.G.W. and N.B.P. Ware.
Period IV B	Late N.B.P. Ware period.

At JHK-2 regular habitation appears to have started during the Proto-P.G.W. period, indicating that the habitation of the black-and-red ware people remained confined to JKH-1, signifying thereby that with the introduction of iron during Period II, there is an expansion in the size of settlement covering the area of JKH-2 as well.

Belonging to Period HI A, was discovered a U' shaped *chulha/furnace* (?) with two tubular openings on the back and side ways and two circular pits in front of it. These pits yielded clay mixed with pinkish ash and small number of pottery sherds. In absence of any tangible evidence in the form of antiquities its exact nature could not be ascertained.

In the uppermost levels of Period III B were exposed two circular/oval plans of mud houses with post-holes at regular intervals (pl. XXVIIA). It appears that the superstructure and the roof was supported by the wooden-posts. One of the two houses had a diameter of 5.07m north-south and 4.95m east-west. The second house was slightly oval measuring 6.10m north-south and 5.40m east-west. Close proximity of both of them indicated that perhaps they formed two units of one house complex. On removing the deposit two pits full of ash were noticed. On the side of one of the pits which was circular in plan were found large number of pottery discs. It appears that of the two pits described here the former was a ritualistic fire pit, where as the latter pit was used for cooking food. This evidence suggests that perhaps the pottery discs had some ritualistic significance.

In one of the trenches on JKH-1, overlying a partially exposed floor of P.G.W. phase were found horizontally laid two handmade burnt-bricks with finger marked curved lines. The real context could not however be ascertained.

Significant antiquities recovered from the deposits of Period IIIB of both JKH-1 and JHK-2, included a gold ornament flat spiral in shape, copper antimony rod, fish hook and few unidentifiable objects; iron slags and objects such as nails, arrow-head, spear-head, sickle etc; terracotta decorated discs, wheels, balls, beads, bird and animal figurines, geometrical objects as the one recovered in earlier excavations and various bone objects.

In order to trace the extent of the ditch/channel further belonging to the P.G.W. phase two trenches were laid on the western fringe of JHK-1. Though we could not trace any such thing associated with P.G.W. period, however, a bigger channel running north-south was noticed. Its maximum depth from the surface was 4.80m and since almost half of the width

of the moat was traced in one of the quadrants of a trench probably its total width was about 10m. From the accumulated deposit of the channel were found cast copper coins, pottery associated with N.B.P. and large number of burnt bricks and brickbats. Thus the channel could be assigned to Period IV B. The use of burnt bricks in structures during this period is attested by a floor partly covered by burnt bricks on the top terrace of JHK-1.

From the deposits of Period IV A, noteworthy antiquities were terracotta grey stylised human figurine with incised decoration and a terracotta ram (pi. XXVIIB) with coiled horns and incised decoration. Similar kind of ram has been reported from Bhagwanpura.

80. EXPLORATION OK TEHSIL AURAIYA, DISTRICT ETAWAH.— In the course of his exploration under village-to-village survey, Suresh Singh of the Agra Circle of the Survey, explored sites at Ayana, Juhikha, Qasba Janan and Qasba Shinganpur yielding grey and red ware ranging from Sunga-Kushana to mediaeval periods. A temple of goddess Durga of eighteenth century at Astha, an old fort at Bhareh, a mosque and a tomb at Dalelnagar, a Siva temple of sixteenth century at Garh Kasda, a well at Paighamberpur of Mughal period and a temple of seventeenth century at Baburpur were also noticed.

81. EXCAVATION AT NARHAN, DISTRICT GORAKHPUR.— In continuation of the last year's work *(1984-85,* pp.89-91), Purushottam Singh assisted by Ashok Kumar Singh of the Banaras Hindu University resumed the excavations at Narhan with a view to obtaining a detailed picture of the settlement pattern of the earliest inhabitants.

A 9 x 9m area divided into 2m square was excavated on Mound-1. The excavation revealed that the first settlers lived in wattle-and-daub houses. Burnt lumps of clay with reed marks and bamboo/wooden impressions were found in large numbers. Two successive floors made of beaten mud, occasional post-holes and several ovens and hearths were found. Deep pits cut into the natural soil containing pottery fragments, animal bones, antlers and loose ashy earth were encountered. Some of the bones and antlers bearing cut mark and occasionally charred, indicated that meat was an important component of their diet. Remains of charred grains were collected by flotation technique.

The pottery repertoire of Period I comprised black-and-red ware, red slipped ware and black slipped ware. It was observed that black-and-red ware accounted for 74% in the earliest layers as compared to 58% noted in last year's work. Several pieces of stem of dish-on-stand in black and red ware were recorded. While dishes were found to be totally absent in black-and-red ware, some new shapes like the deep bowl with everted rim and grooves on the body and lipped basins were noticed in this ware. Apart from the linear designs, several new varieties of paintings were noted including finger designs in white pigment and check design in black over inside red surface of bowls. The antiquities comprised of a few bone points, having irregular rectangular cross-section and flattened cross-section; pottery discs and a few terracotta beads. Iron was also reported from the topmost deposit of Period I.

In Period II black slipped ware became predominant as compared to its frequency in Period I, whereas the black-and-red ware ceased to exist. The number and variety of bone

points having circular cross section suddenly increased in the period. Some of them are socketed while others are tanged and have fine long points. In the current year's dig two sub-periods were noticed. Period IIA accounts for pottery discs only whereas in Period IIB terracotta discs appear for the first time. The latter have nail pattern and geometric designs engraved on the edges of both surfaces. Period IIB was also marked by typical pottery shapes in red ware, coarse grey ware, black slipped ware in diminishing quantity and occurrence of iron antiquities like nails and chisels and glass beads. Large chunks of burnt clay were noticed in this sub-period.

After the end of the Period IIB, the site was deserted and the inhabitants seem to have moved in several directions. They settled at Amauli, located 1 km west of Mound-1 and at Mound-2 locally known as Chandihar mound.

82. EXCAVATION AT HULASKHERA, DISTRICT LUCKNOW.— In continuation of the previous year's work *(1983-84,* pp. 88-89), the Department of Archaeology, Government of Uttar Pradesh, under the guidance of Rakesh Tewari assisted by Rakesh Kumar Srivastava resumed the excavation with a view to understand the settlement pattern belonging to Kushan period (Period III) and also to confirm the cultural sequence of the site.

In Period III the residential complexes of a specific pattern of the Kushan period were found constructed in which a certain space of 0.75-1.00m was provided between two complexes. The complexes measured about 15.00 12.00m, 11.00 X 4.50m, 13.00 x 4.50m. The houses built of kiln burnt bricks consist generally of two or three rooms measuring 3.00 X 1.70m, 3.30 X 1.20m and 4.10 X 3.50m. Some of the rooms were paved with burnt brick floors, while the others have mud floor. The important find of this period was ring shaped copper seal with the legend *Sri Vasudeva* (?) in Brahmi script of the late Kushan period. Other antiquities included fine terracotta human figurine, several copper coins of Kushan period, gold treated glass beads, bone arrowheads and awls, iron spearheads and a fine intact iron axe.

To confirm further the earlier sequence, elevated and central point of the mound was again excavated. The material remains noticed were from the seventh century BC to the late medieval period.

Amongst the finds, mention may be made of several terracotta figurines showing the different hair styles of Gupta period and a sealing of late Gupta period bearing a legend *yashdeva.*

83. EXPLORATION IN DISTRICT MATHURA.— R.C. Gaur of Aligarh Muslim University, Aligarh, explored a Painted Grey Ware site at Nau-Jhil, a sub-town in District Mathura. A few sherds of typical P.G.W. and its associated wares were picked up from the high mound, at a short distance on the right bank of the Yamuna near the Police Station.

84. EXPLORATION IN DISTRICT PITHORAGARH.— Under the village-to-village survey scheme, Archaeological Unit of the Department of Archaeology, Uttar Pradesh, conducted exploration in the vicinity of Devidhura in Tehsil Champawat. In the course of exploration, about fifty-six villages were locally inspected. Ancient temples, covered water-springs and stone images of archaeological importance were located at Garsari, Mantande, Kanikot, Kutad and Jakhola. Stone sculptures of Surya, Mahisasurmardini, Lakshmi-Narayana and Parvati were found

alongwith the remains of ancient temples at the village of Garsari. A medieval temple was located at Mantande. An inscription in Devnagari script dated Saka 1314 (AD 1392) was found engraved on the wall of the water-spring near the temple at Mantande.

85. EXCAVATIONS AT DAMDAMA (WARIKALAN), DISTRICT PRATAPGARH.— The excavations were resumed at the Mesolithic site of Damdama (Warikalan) by V.D. Misra, J.N. Pandey, J.N. Pal and M.C. Gupta of the Department of Ancient History, Culture and Archaeology, University of Allahabad.

The highest point of the contour of the site situated in the centre of the mound was planned to be exposed afresh. A 2 X 3 square metre area consisting of squares 1-16, 1-17, J-16, J-17, and K-16, K-17 was exposed. Being one of the most elevated area here the covering soil of the Mesolithic occupation deposit was very thin. The first Mesolithic level was the basal part of layer 2 on which microliths, animal bone fragments, burnt clay lumps and sandstone pieces (fragments of querns) were found. In this area only layer 2 was excavated. A long bone, lying east-west in square 1-16, and partly exposed before excavation, was cleaned *in situ* during excavation and some more bones articulated with the long bone were exposed. Now it became clear that it was part of a human skeleton placed in a grave (Number XIX S.B. 2) oriented east-west. The skeleton is badly damaged partly due to weathering and partly due to its exposure to the present surface. The skeleton is represented by ulna, fragments of humerae, both the patella, part of right fibula, part of left tibia and fibula, etc. Presence of sciatic notch of right hipbone and robust appearance of available bones indicate that the skeleton belongs to the male. The extremities of femur, tibia and fibula are fused with their respective shafts indicating that the individual was an adult. One circular hearth was also exposed in the north-west corner of square K-16. Burnt clay lumps, very small fragments of charred animal bones and ashy clay were found from this pit-hearth.

The earlier excavated squares N-6 to N-8, 0-6 to 0-8, P-6 to P-8 and M-9 to M-11, N-9 to N-11, 0-9 to 0-11, P-9 to P-11 were further excavated upto the top of layer 7. A segment of a large circular hearth was found in the south-east corner of square M-11 remaining part of the hearth being under the unexcavated area. A muller cum hammer-stone bearing use-mark was found on the top of layer 7 in square 0-11 along with microliths, burnt clay lumps and animal bone fragments.

While digging in square 0-6, part of a grave sealed by layer 6 was located. This grave (numbered XX S.B. 6) extended upto squares 0-4 and 0-5 was excavated very carefully. It contained skeleton remains of two individuals, one male and one female, both placed in supine position with west-east orientation (pl. XXVIII). The male skeleton is represented by complete skull, maxilla, mandible, the two clavicles, scapulae, the vertebral column, ribs, the humerae, the radiae, the ulnae, corpals, metacarpals, phalanges, the hip bone, the femora, patella, the two tibiae, the fibulae, tarsals, metatarsals and phalanges. The skeleton exhibits rugged features, its long bones are robust, supra orbital ridge is well-marked, the hipbone also exhibits a narrow sciatic notch. All these points put together ascribe the skeleton to a male.Complete dentition, poor fusion of long bones with cortiledges suggest that the skeleton belongs to an adult. The female skeleton placed to the right of male skeleton is represented by skull, maxilla,

mandible, two clavicles, scapulae, a corroded vertebral column, corroded ribs, humerae, radiae, ulnae, femora, the tibiae, the fibulae and the tarsals, metatarsals and phalanges, though with complete dentition, incomplete fusion of the ends of long bones suggest that the skeleton belongs to an adult, not well-advanced in age.

Absence of well-pronounced supra orbital ridge, the tendernes of bones together with a wide sciatic notch ascribe the skeleton to a female.

A 5 x 5m area was planned to be excavated afresh in squares S-7 to S-11, T-7 to T-11, U-7 to U-11, V-7 to V-11and W-7 to W-11. Unfortunately the major portion of the area was found by later pit activities subsequently filled up with washed deposits containing both old and new materials. However, the excavation of layer 2 brought to light interesting artifacts. A complete vertebra of a big animal, possibly elephant, was found in square S-7 and T-7, quern fragments and charred animal bones in square S-11 T-11, long animal bones in square V-11 along with microliths and burnt clay lumps. These artifacts were found on the top of layer 3. A few big long animal bones and scapula were found in square V-11. The excavation in this area could not continue further due to disturbance in many of the squares.

An eight square metre area in square V-2 to V-5 and W-2 to VV-5 was also exposed afresh. Squares V-2 and W-2 and part of squares V-4, W-4 and W-5 were disturbed and contained later material. In the rest of the squares top of the layer (3) was available containing burnt clay lumps, microliths and charred animal bone fragments. In squares V-3 and W-3 bottom of a grave (Numbered XXI S.B. 2) containing fragmentary bones of human skeleton was located. The skeleton was represented by fragment of scapulae, the humerae, fragments of right radius and ulna, corroded vertebral column, and part of the hipbone. The available hipbone exhibits a wide sciatic notch suggesting thereby that the skeleton could be ascribed to a female. The placing of the bone indicated that it was placed in supine position with west-east orientation.

In the northern part of the site in the section of the drain dug by villagers long human bones were exposed, apparently the drain had cut the skeleton. In this area also a 2 x 2m, area was exposed to confirm the stratigraphy of the skeleton and its associated artifacts. The grave No. XXII, sealed by layer 6 contained the skeleton remains of a single individual placed in supine position in west-east orientation. The lower portion of the skeleton was disturbed by the recent drain, while the upper portion damaged by a pit affecting vertebral column, skull scapulae, humerae, etc. The skeleton is represented by a few vertebral, seven ribs on the right side, two rib fragments on the left side, fragement of right humerae, right phalanges, left radius and ulna with distal end and carpals metacarpals and phalanges, parts of hipbone, the complete femur, the two patellae and the upper portion of the bitiae and proximal end of the left fibula. The femur was not completely fused with the cartilages, indicating thereby that the dead might have been below twenty years of age at the time of death. The left hipbone is characterized by a narrow sciatic notch suggesting thereby that the skeleton belonged to a male.

The floatation technique for collecting the vegetal remains helped us in recording millet like charred grains from almost all the excavated layers.

86. EXPLORATION IN DISTRICT SAHARANPUR.— Satish Kumar Tyagi, a research scholar of the

Department of Archaeology, Deccan College Post-graduate and Research Institute, Pune, conducted archaeological exploration in Tehsil Deoband of District Saharanpur. Besides discovering the new sites, those reported by earlier workers were also visited to collect the data. Archaeological sites with cultural affiliation to Late Harappan, P.G.W., N.B.P.W., Sunga-Kushana and medieval periods were brought to light.

Village/Site	*Cultural assemblage*
Basera	Medieval
Chandiana Koli	Late Harappan, Northern Black Polished Ware and Sunga Kushana
Dalheri	Late Harappan
Dugchari	Late Harappan
Ghiana	Painted Grey Ware and Sunga-Kushana
Guramb	Medieval
Indrawali Kalyanpur	Sunga-Kushana
Jarauda Panda	Medieval
Jaula Dindauli	Medieval
Sarseena	Northern Black Polished Ware and Sunga-Kushana

87. EXPLORATION OF GARHA, DISTRICT SULTANPUR.— The site was explored by M.C. Gupta of the Department of Ancient History, Culture and Archaeology, University of Allahabad. The site is situated on the right bank of the Gomati river, at a distance of 15km west of Sultanpur town. The surface exploration covering about 4km revealed the late N.B.P. pottery and associated wares.

WEST BENGAL

88. EXPLORATION IN DISTRICT BANKURA.— The Directorate of Archaeology, Government of West Bengal conducted an organised exploration in the region of Susunia flanked by the stream of Gandhesvari in the District Bankura under the general supervision of S.C. Mukherji, with the assistance of S. De, B.N. Samanta, P.C. Sen and D.M. Chakraborty.

It may not be out of place to mention here that a large number of developed Acheulian handaxes mainly of quartz and quartzite along with fossils of vertebrates, assigned by the paleontologists of the Geological Survey of India to the Late Pleistocene times, were collected from the aforesaid region in the sixties of the present era by the Directorate. But unfortunately these collections were not made according to scientific lines, and as such, a project was taken during this season to locate the exact horizon of the lithic artefacts/cultures and fossilized remains of animals found there in the past, besides assessing their palaeo-ecological and cultural inter-actions.

The elevated tract of Susunia region yielded more palaeoliths than the foot-hills and hill

slopes and river banks in the neighbourhood. All these areas lie between one hundred-thirty and one hundred-ninety metres contour lines. Susunia was a suitable place for habitation (camp site) of Early Man in West Bengal, and the hill slopes provided the raw material for the stone artefacts in the shape of quartz and quartzite pebbles and nodules. It is not easy to indicate the relative age of the Early Stone Age tools found at Susunia. But, some indication of their age may be had from the occurrence of animal fossils in sandy deposits overlying gravels containing Early Stone Age tools. Sometimes, the fossils were found along with these tools, or in the deposits in which the Middle Palaeoliths occurred. The bulk of the fossils were recovered from the deposits along the Gandhesvari and other streams and *jors* or *nullahs,* where the water flowed over a considerably steep gradient during the rains. The horizon of the finds may be assigned to the weathered sandy silt of the Pleistocene Period. The fossilized remains of Palaeoloxodon *namadicus* (extinct elephant species), found from this region in the past, was dated by S.D. Chatterji of Jadavpur University by c_{14} method as belonging to an unknown epoch before 40,000 BC (beyond the limit of the sensivity of the instrument).

The sites of Bamundiha (Jor Kundi) near the stream of Dhankora, a tributary of the Gandhesvari, Babladanga and Beldanga, flanking the insignificant *jors* feeding the Gandhesvari were intensively explored during this season with a view to locate the exact horizon of the lithic artefacts and the fossilized remains found there in the past. From several exploratory digs in the region and examination of river banks, it was confirmed that the horizon of the fossils came from the weathered sandy silts of the Pleistocene (late) times when the region had forests and water-logged areas evidently after a 'wet phase'. The animals represented by the fossils once roamed the elevated tract of Susunia. The geo-stratigraphy as revealed from the exploratory digs done in the aforesaid places indicated that there were six deposits, viz. Bedrock, Gravel I, Loose Gravel, Silt, Gravel II and recent. There were clay beds including the recent one which might indicate an arid and semi-arid climatic conditions in the region during the Early Stone Age. The explored sites are as follows:

Bamundiha *(Jor Kundi):-* It is situated to the south of Dhankora stream. The southern section of Jor Kundi was subjected to trial - digging and altogether seven layers or strata were noticed.

Layer 1	-	Humus - 0.4m.
Layer 2	-	Compact sticky hard grey earth mixed with lime concretions with occasional sandy patches - 1.4m.
Layer 3	-	Ferrugenous concretion - 0.1m.
Layer 4	-	Cemented gravel - 0.6m.
Layer 5	-	Compact clay with gravels and boulders with sticky earth - 0.42m.
Layer 7	-	Thick lateritic soil - 0.22m.

The bedrock is granitic gneiss.

From layer 4 a digging point or digger of Middle Palaeolithic times has been recovered.

Biribari: It is situated near the confluence of the Gandhesvari and the Jhikuria (a tribu-

tary of the former). A cutting was made in the western section of the Gandhesvari which exposed the geo-cultural stratigraphy from top grey soil overlain by humus of 5cm (1). Layer 2 is about 2.00m in depth and is underlain by yellow loamy soil with calcareous nodules and lateritic pellets (0.6m). Layer 3 which is 0.6m is the horizon of Mesolthic culture. From a nearby area 30 lithic artifacts, viz. points, blades, lunates, awls, burins and scrapers of chert, agate, etc. were collected. In layer 4 sticky compact brown earth with lateritic pellets and scanty ghooting was noticed. Layer 5 was represented by calchi which indicated a 'dry phase'. There was a boulder bed of 0.60m thickness above the bed rock consisting of granitic gneiss. In other places, neolithic ring-stones and hammer stones were found from a deposit of red soil having 1.20m thickness. From a nearby place two Lower Palaeolithic tools, two Middle Palaeolithic tools, fourteen microliths and three Neolithic tools were collected.

The site of Biribari which yielded in the past artefacts appertaining to various stages of the Stone Age is thus rich in different chrono-cultural equipments.

Suabasa: It is situated near Lachmanpur flanking a *jor,* a tributary of the Gandhesvari. Here also a trial dig was made and three layers were encountered. Layer 1 Humus. Layer 2 Loose pale greyish sandy earth mixed with lateritic pellets. Layer 3 Angular rock fragments mixed with sticky calcareous materials. The thickness of the total deposit is 0.49m. The bed rock is below this layer. From this layer 3, one digger, one bola and one implement for skinning - all made of quartz and belonging to Middle Palaeolithic times were recovered. These digger type of stone tools are very rare in West Bengal. Fossils were also recovered from this place in the past.

Lachmanpur: There is a natural lake in the village of Lachmanpur which happens to be the source of the *jor* which flows past the Stone Age site of Suabasa. The southern side of the lake was examined and a cutting was made in its vicinity with a view to unearthing skeletal remains of Early Man who might have lived around this lake in the Stone Age. This lake might have been the only source of drinking water for not only the wild animals but also for man. But except two Early Stone Age tools, no such remains were found.

Sagariya: It is situated near Suabasa. Here a rock engraving visualizing a) a hunter with a bow and arrow and b) a figure engaged in collecting honey (two overlapping each other) was found. From this village few potsherds of gritty red ware (some with cord impressions), a broken pestle and a few lithic implements like a spearhead or point with a tang in milky quartz were collected.

Jamthol: The cave was found at the top of Jamthol hillock lying to the south-west of Susunia and flanking the Amjorh, one of the tributaries of the Gandhesvari. One Mesolithic point and a few flakes were found. Several Lower and Middle Palaeolithic and Mesolithic tools were collected from the slope of the solid hillock. The cave is now in a dilapidated condition.

Bhaluksoda: The cave lies to the north-east of the Susunia Hill and flanks the spring known as Yamadhara. The measurement of the cave from east to west is 5.20m. It has the entrance in the south-west and the opening is 0.50m wide. The single slab roof of the cave has developed cracks and may give way at any moment. A trial-digging made inside the cave revealed two layers and from layer 2, which was the habitational layer, two iron spearheads, few bone implements and some pottery fragments in dull red ware having crude texture were

recovered. The cave was probably used by the Early Iron Age people. The bone implements found at this site are interesting and the spear-points and knife - like instruments, which form the bulk of these implements, might have been made out of animal long bones (split-up longitudinally).

Animal fossils and cuprolites of carnivorous animals, collected from Beldanga, Bamundiha and Bansol around Susunia are yet to be examined by the Palaeontologist of the Geological Survey of India.

89. EXPLORATION IN DISTRICT BANKURA.— During the course of exploration T. J. Chakraborty of the Calcutta Circle of the Survey brought to light the following sites of archaeological interest:

Police Station	*Village I Site*	*Cultural assemblage*
Indas	Adparakumrul	Mosque
-do-	Somsar	Temples, Mosques, old buildings and sculpture of Vishnu
Patrasayer	Atra	Historical mound
-do-	Narayanpur	Temples
-do-	Patrasayer	Temples
-do-	Rampur	Ekaratna temple of *circa* eighteenth century
-do-	Shyamadaspur	Temples of *circa* eighteenth century
-do-	Telur	Mosque
Sonamukhi	Hamirhati	Ekaratna temples of *circa* eighteenth century

90. EXPLORATION IN DISTRICT MIDNAPUR.- During the course of exploration Santanu Maiti of the Calcutta Circle of the Survey brought to light the following sites of archaeological interest:

Police Station	*Village/Site*	*Cultural assemblage*
Bhagbanpur	Dhalua	Navaratna and Atchala temples of eighteenth century
-do-	Jukhia	Flat-roofed temple of eighteenth century
Contai	Hinchi	Mosque
-do-	Kanaidighi	Temples of eighteenth century
-do-	Kanti	Temple, tombs and sculpture of thirteenth century AD
-do-	Kumirda	Flat-roofed temple of eighteenth century
-do-	Sarda	Atchala Siva Temples of eighteenth century
-do-	Talda	Sculpture of twelth-thirteenth century

91. EXCAVATION AT BALLAL DHIPI, DISTRICT NADIA.— In continuation of the previous year's work *(1984-85,* p.99), Shankar Nath assisted by Bimal Bandyopadhyay, Santanu Maity, Samar

Ghosal, S.K. Ghosh, A.B. Sen, S.K. Kundu, P.Das and C. Khamaru of the Survey resumed work with a view to ascertain the nature of extension of the structure at the site.

This Benson's work was mainly concentrated in the central and western portion of the mound. The major half of the central portion of the main shrine (pl.XXIX) was exposed this year, hut the exact nature of the shrine is not yet clear. At least two structural phases were apparent. The earlier builders used mud-mortar while the later used lime as mortar. It was revealed from the collapsed superstructure of the later phase that it was probably a dome shaped one. In continuation of the enclosure wall which was in all probability *pancharatha* in plan is also traced out in the western proximity of the mound. In addition another retaining wall, which was added later to the complex and built to safeguard the main shrine from the flood water has also been traced. Traces of two layers of sandy silt deposit, one below the later retaining wall and the other above it, also denoted the evidence of severe flood at least for two times which obviously affected the complex.

Further addition to the entire complex, exposed in this season were some subsidiary shrines (?) abutted on the thicker boundary wall. Three of such were so far been exposed on the south, north and south-eastern periphery of the mound. These subsidiary shrines have approximately the same length and breadth (10.87 X 6.3m) and have the identical plan and elevation i.e., rectangular on plan with gradually receeding pyramidal elevation. The superstructure of these shrines were gradually receding pyramidal elevation. The superstructure of these shrines along with the approaches were missing. In one side of these shrines box-like pit or cell gradually becoming narrower in dimension due to the bulging offsets of the facades from all sides. All these pits or cells were filled with plain silty earth.

Almost in all over the mound traces of the lime flooring of the later phase were found. The formation of the lime flooring was in this fashion: at first bricks were paved neatly to serve as soling for carrying a thick layer of rammed brick bats, which was again covered with a coating of lime. Organic lime was used for the coating and is made of small snails. Both complete and broken bricks were used for soling and probably the latter was collected from earlier structural edifices. This flooring had brick-edging following the plan of the high enclosure wall, which may probably be regarded as a pathway for circumambulation. Previously the brick soling of this floor has been mentioned as floor No.2. But it was almost certain that this brick soling had no separate entity, rather it was the part and parcel of the same flooring.

It was risky to date the structural phase at Ballal Dhipi by the size of the bricks which varied widely in dimension mainly between 20 X 16 X 4cm and 24 X 19 X 5cm as stated before. Some exceptionally large bricks including decorated bricks (30 X 20 X 5cm, 27 X 9 X 5cm, etc.) were also used for construction.

The pottery comprised *handis,* jars, bowls, dishes, *lotas,* sometimes with spout, mostly in red ware in both slipped and unslipped varieties. Specimens of coarse grey ware and black ware were also found and the designs were mainly executed by incision. These sherds were thick, medium and thin in fabric and sometimes under-fired. These sherds had mostly been found in layers 1, 2, and 3 and also from the pits.

A number of stucco heads representing human, animal and bird were found in this season (pl.XXX). The human heads betray divine character with *urna,* headdress, *etc.,* and the elon-

gated eyes and lips were executed in deep linear designs. Some terracotta miniature maribolons and balls were found. Mention may also be made of terracotta animal figurines representing *naga,* wolf, dog, fox, horse, etc. No complete stone sculptural members in stone were found from the debris forming layer 3. Mention may also be made of skeletal remains of a victim who probably died being trapped in a collapsing superstructure. A terracotta ear-ring possibly worn by the victim was found near the skull of the victim.

It is tempting to hypothese that the structure in its last phase probably belonged to a Saivaite sect.

92. EXPLORATION IN DISTRICT 24-PARGANAS.— During the course of exploration Samar Kumar Ghosal of the Calcutta Circle of the Survey brought to light the following sites:

Police Station	*Village I Site*	*Cultural assemblage*
Sagore	Mandirtala	Small mound of historical period
-do-	Prasadpur	Sandstone sculpture of Vishnu of Pala-Sena Period
Sonarpur	Boral	Sculptures, potteries, terracottas and other antiquities of historical period

II. EPIGRAPHY

SANSKRITIC AND DRAVIDIC INSCRIPTIONS[1]

ANDHRA PRADESH

1. CHOLA INSCRIPTION, BURUZUPALLI, DISTRICT CUDDAPAH.— This inscription engraved on a stone lying in a field, in early Telugu language and characters of the seventh-eighth century mentions [Chi]nda[va]-rajulu, a hitherto unknown king as ruling over Renadu 7000. It records the gift of a village *(grama-datti)* to Irui Sama (Iruvi Sarma) on the orders of Aganitaveddi.

2. KAYASTHA INSCRIPTION, MAILAVARAM, DISTRICT CUDDAPAH.— This inscription engraved on a stone slab set up near the State Archaeological Museum, in Telugu language and characters is dated in Saka 1211 (AD 1289). It records the gift of land to the temple of Nagaresvaradeva by *Mahamandalesvara* Ambadeva Maharaju of Kayastha family who is described as *mandalika brahmarakshasa* and *gandapendara.*

3. VIJAYANAGARA INSCRIPTIONS, MAILAVARAM, DISTRICT CUDDAPAH.— Of the three inscriptions en graved on different slabs lying near the State Archaeological Museum, in Telugu language and characters, the first inscription, dated in Saka 1447 (AD 1525) refers itself to the reign of Krishnadevaraya of the Tuluva dynasty. It records the gift of land to god Sangamesvara by Annamjeya, son of Virupakshadikshita of *Gargeya-gotra* and also states that the gift-land is situated in the Gandikota-magani which was given as *nayamkara* to *avasaramu* Devarasayya by the King. The second inscription is dated in Saka 1475 (AD 1553). It refers to a gift of land to *mahajanas* during the reign of Sadasivaraya by certain persons. The third inscription, dated in the cyclic year Prajotpatti (AD 1570) records the gift of the village Tarivemula *alias* [Ra*]ngarajaya-samudram to Basavappa by the king Tirumaladeva-maharaja.

4. BRAHMI INSCRIPTION, MUNULAGUTTA, DISTRICT KARIMNAGAR.— Engraved on a cavern, this Brahmi label inscription reads *Husapa Padam* flanked by a *svastika* on the left and *triratna* on the right in characters of the first-second century AD.

5. EARLY TELUGU INSCRIPTION, NELAKONDAPALLI, DISTRICT KHAMMAM.— This inscription engraved on a broken stone lying in the field, a kilometer away from the village, is in early Telugu

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[1]Information from- 1-3 5-6, 12-14, 16-17, 19-27, 32-38, and 42-52, K.V. Ramesh and Madhav N. Katti, assisted by M.D. Sampath C R Srinivasan MJ. Sharma, K.M. Bhadri, Venkatesha, Nanjundaswamy, C.A.P. Sastri, P. Venkatesan, D.M. nagaraju, S Nagariuna S Swaminathan TS Ravishankar and Jaiprakash of the Epigraphy Branch of the Survey, Mysore; 4,7-8, Archaeology and Museums Government of Andhra Pradesh; 9-10, Archaeology and Museums, Government of Haryana; 11, 15 and 18, Archaeolotgy and Musumes Government of Kamataka; 28-30, Aurangabad Circle of the Survey; 31, Shobhana Gokhale of Deccan college Post-graduate and Research Institute, Pune and 39-41, Archaeology and Museums, Government of Rajasthan.

language and characters of the seventh-eighth century and seems to refer to some grant by a certain ... [ra']ju and mentions the *nakara* and others of Kondapalli, which is evidently the findspot of the record.

6. TWO KANNADA INSCRIPTIONS, SRISAILAM, DISTRICT KURNOOL.— These inscriptions, in Kannada language and characters, engraved on a pedestal consisting of a terracotta image of a seated male figure in *padmasana* posture with folded hands, now preserved in the Office of the Executive Officer, Srisaila Devasthanam, Srisailam, can be assigned to the thirteenth century on the basis of palaeography and internal evidences. It mentions that it is the image of *Bhujabalabhima* Kesadeva-dandanayaka, who is described as the follower *(anucharana)* and the restorer *(samuddharana)* of the kingdom of Hosalaraya Vira Ballaladeva. Another image with similar posture, fixed to the same pedestal on the right side of the above image bears a legend which reads: *Pratima Gandabherundadeva.*

7. CHALUKYA INSCRIPTION, KORPOLE, DISTRICT MEDAK.— Among the records of the Chalukyas of Kalyana, this inscription belongs to the reign of Ahavamalla Tailapa II and dated S.895-Srimukha, Vaisakha Sudha 5, Guruvara corresponding to AD 973, 10th April, Thursday. This is the earliest record of the Chalukyas of Kalyana in Telangana as it is dated in the regnal year of Tailapa II, the founder of the Chalukya dynasty.

8. INSCRIPTION, RAMAYAMPET, DISTRICT MEDAK.— This inscription, dated Saka 1233 (AD 1311) is important as it contains a list of levies or taxes collected during the Kakatiya period.

HARYANA

9. INSCRIPTION, JANDALI, DISTRICT AMBALA.— A seven line inscription in early Devanagari script and dated in Vikrama Samvat 1941 (AD 1884) is engraved on white spotted red sandstone.

10. INSCRIPTION, SHAHPUR, DISTRICT AMBALA.— A fifteen line inscription of about twelfth century AD on greenish sandstone was collected from Shahpur (pl. XXXIA)

KARNATAKA

11. INSCRIPTIONS, HAMPI, DISTRICT BELLARY.— Several new inscriptions have been noticed in Hampi area. All these are of Vijayanagara period dating from fourteenth to sixteenth century AD. Three more label inscriptions mentioning watch towers and gate have been discovered in addition to the series of such inscriptions discovered last year. To the west of the city near 'Sister boulders' is a large gate locally called as Kudurekallu gate. To the south-east of this gate is an inscription on a boulder reading 'Sri *Kotisankaradevara bagilu.'* This gate can be identified as the gate of god Kotisankara. To the north of the Zenana enclosure on the hill top are two inscriptions, one near the small four pillared watch tower reading *madana kotala,*

and another near three small shrines reading *misaragandana kotala* mentioning names of these watch towers.

On a rock to the west of the Hemakuta group of temples is an inscription dated in AD 1377 recording construction of a well to god Prasana Benaka. Near this is another inscription on a boulder dated in AD 1390 recording construction of a well by Bhaktara Nagappa disciple of Kriyasakti Vodeya.

On the road from Hazara Rama temple to the Talrighat in the Islamic quarters is an inscription on a boulder recording construction of a tomb by Sakaladi Rahuta son of Dadana Rahuta.

12. TWO KALYANA CHALUKYA INSCRIPTIONS, BHALKI, DISTRICT BIDAR.— The two Kannada inscriptions, engraved on two faces of a stone slab kept near the main entrance of C.B. First Grade College, belong to the reign of Tribhuvanamalla (Vikramaditya VI). The first one dated in Chalukya Vikrama Year 24 (AD 1099), registers certain gifts made to the gods, Traipurushadeva, Kapilesvara and Bhallumkesvara for maintenance, worship and offerings by *mahamandalesvara* Kumara[Vira]- Hemmadideva and 300 *mahajanas* of Bhallumka.

The second inscription, dated in Chalukya Vikrama Year 37 (AD 1105), records a gift of 10 *gadyanas* to the village god and Baranamdeya-upadhryaya by *mahamandalesvara* Kumara [Vira] Permmadideva.

13. KALYANA CHALUKYA INSCRIPTION, HALLI, DISTRICT BIDAR.— The inscription engraved on a stone lying in front of the Asvattha-katte, in Kannada language and characters, refers to *mahasamanta Piriya-benteya Pempuuaravuta*..... and *dandanayaka* Sivaraja and registers a gift of land at the instance of the latter, to *[Pa]supatacharya Ratnarasi,* who was described as an ascetic hailing from Banarasi (Varanasi) for the maintenance and worship of god Pampesvara and feeding of ascetics and students.

14. KALYANA CHALUKYA INSCRIPTION, LANJAVAD, DISTRICT BIDAR.— This inscription, in Kannada language and characters is found engraved on a pillar set up in front of Hanumanta temple. Dated in Saka 979 (AD 1057), it refers to the gift of an *agrahara* on the day of *Uttarayana sankranti* after making it tax-free to one Chamayya while the king Trailokyamalla (Somes vara I) was encamping at *Appayyanavidu* in Palamadevasa of Chodanadu.

15. INSCRIPTIONS FROM DISTRICT BIDAR.— In the course of the village-to-village survey of antiquarian remains in Bidar District, Kannada inscriptions on stone, of the Late Rashtrakuta, Kalyana Chalukya and Vijayanagara periods have been noticed in Sindhol, Barur, Andura in Bidar Taluk; Seadal, Chathoral, Hilalapur, Markal, Meenkhera, Udamanahalli, Bimalkheda, Udbal, Kodambal, Banahalli and Kopparageen in Humnabad Taluk.

Of the inscriptions from Andura belonging to the period of Jagadekamalla the Kalyana Chalukya king, one records the grant of land to god Naranesvara. In another inscription in this village, in Kannada script and Sanskrit language of about the twelfth century AD only the imprecatory portion is extant. The inscription from Markal belongs to the third regnal year

of the Kalyana Chalukya king Vikramaditya VI. The inscription from Banahalli refers to the IVth regnal year of the Kalyana Chalukya King Bhulokamalla.

16. KALYANA CHALUKYA INSCRIPTION, IDLUR, DISTRICT GULBARGA.— This inscription, engraved on a stone set up in front of Sankaralingesvara temple, in Kannada language and characters, is dated in Saka 1037 (AD 1115). It refers to prince Jagadekamalla, as *srimat-piriyarasi Chamadaladeviyaranugam, mahamandalesvara,* etc, and records that, Butarasa, the *mandalika* of Jagadekamalla made some gift of land as *sarvvanamasya* to god Jadeya Samkara on the holy occasion of *Uttarayana-sa-mkranti* (Samkranti).

Another inscription on the same slab in continuation of the above, records some more gifts to the same god by *mahapradhana* Anantadevarasa and his subordinates for the worship and offerings, while the king was encamping at Bennekallu.

17. THREE KALYANA CHALUKYA INSCRIPTIONS, SEDAM, DISTRICT GULBARGA.— The first two inscriptions in Kannada language and characters, are engraved on the two sides of a stone slab found in a dilapidated Jaina temple. Of these the first one belongs to the reign of Tribhuvanamalladeva (Vikramaditya VI) ruling from Jayamtipura, refers to the Jaina pontiffs Prabhachamdratraividya-bhattarakadeva, Ramachandramuni and his disciple Traividya-Prabhendubhattaraka. It describes the *300-asesha-mahajanas* of *agrahara* Sedimba with high sounding epithets, including *Kanchipura-dvara-kavata-putabhedan-abhichara-homa-sadhakaru.*

The second one, dated in the twentieth regnal year of Nurmmadi Trailokyamalla (Taila III) records the installation of the goddess Sarasvati jointly by the 300 *asesha-mahajanas,* 500 *nakhara honnavanigas* (jewellers) and *telligas* (oil-merchants) at the above mentioned *agrahara.* Further, it also registers a few more grants of lands, a garden, an oil-mill and money, accrued from certain types of taxes for the purpose of the *ashta-vidh-archanas* and *Chaitra-pavitra.*

The third epigraph, dated in Chalukya Vikrama Year 31 (AD 1106) is engraved on a slab fixed into the outer side of the *prakara* of Manikesvara temple. It registers gifts of land and garden to Madhavadeva and Santinatha of Brahmajinalaya for the ceremonial functions by Baramarasa of Homnatti and *asesha-mahajanas* of Sedimba.

18. INSCRIPTIONS FROM DISTRICT NORTH KANARA.— In the course of village-to-village survey of antiquarian remains in the District, inscriptions of the Kalyana Chalukya and Vijayanagara periods have been noticed at Hungund, Nandikatti, Nesargi, Bachanaki, Bedasagaum, Belehalli, Indur, Pala, Maragadi, Ingalaki, Oralagi, Mundagod, Gangavati, Ulavi. The Inscription on the herostone in Nandi katti records the fight of a hero in defence of the fort of the village. Another inscription in the field of K.K. Sankunni records a land grant to Basavannavodeya of Nesargi matha. One of the hero stones in Bedasagaum dated Saka 1085 (AD 1163) belongs to the reign of the Kalachuri king Bijjala and mentions a later Kadamba king Kirtideva and name of the place Bedasagave. The inscriptions from Voralaga of eleventh and twelfth century AD record the donations to the god Chandresvara. The herostone inscriptions from Gangavati of Saka 1100 (AD 1178) mentions the rule of later Kadamba King Tailapadeva from

Banavasi 12,000 and also Boppayya Nayaka. In Ulavi, the inscription on the finial of the *sikhara* of Channabasavesvara temple refers to the Keladi Chief Immadi Somashekhara Nayaka.

19. KALYANA CHALUKYA INSCRIPTION, DEVARAGUDI, DISTRICT RAICHUR.— This Kannada inscrip tion, engraved on a stone kept outside Mallikarjuna temple, refers to the reign of Tribhuvana-malla (Vikramaditya VI). Dated in the Chalukya Vikrama year 25 (AD 1101) it records that *mahamandalesvara* Dasavarmma who was administering Ededore 2000 and the four *prabhus* of Kaddore - 100 near the Paravari - 76, joining together made a gift of 12 *mattars* of land to the god Huliyamesvaradeva after laving the feet of Kedara-pandita for the maintenance of that temple.

20. SEUNA INSCRIPTION, DEVARAGUDI, DISTRICT RAICHUR.— This inscription, in Kannada lan guage and characters belongs to the reign of Simghanadeva II of the Seuna dynasty and refers to the king's third regnal year (AD 1202). It registers a gift of land to god Huliyamesvara-mahalinga for the *anga-ranga-bhoga* and repairs by Aja[la] sadeva after laving the feet of Chikkayya, the *acharya* of the monastery.

21. TWO KALYANA CHALUKYA INSCRIPTIONS, MUKKUNDA, DISTRICT RAICHUR.— Of the two Kannada inscriptions, the first one is engraved on a stone set up in front of Papanasesvara temple. Dated in Saka 988 (AD 1066), it refers to Trailokyamalla-mahadevi, the chief queen, as administering the *agrahara* of Mukunda situated in Nittarave-70, during the reign of Trailokyamalla (Somesvara I) and records the gift of 12 *mattars* of land for the worship and offerings to god Kapilesvara by the queen on the occasion of *uttarayana-samkranti.*

The second record engraved on a slab built into the left wall of the temple of Murari, belongs to the reign of Tribhuvanamalla (Vikramaditya VI). It is dated in the Chalukya Vikrama year 13 (AD 1088). It records the construction of a Vishnu Temple and further states that while the emperor was performing the *hiranyagarbhadi-mahadana* at the confluence of *Gautama-Ganga-Godavari* on the auspicious occasion of *uttarayana-samkranti, mahamandalesvara* Bacharasa of Sinda family made a gift of 150 *gadyanas* to the 300 *ma-hajanas* (the eminent scholars in different subjects) of *sarvanamasyad-agrahara* of Mukunda.

22. KALYANA CHALUKYA INSCRIPTION, RANAKUNDA, DISTRICT RAICHUR.— This inscription in Kannada language and characters engraved on a stone slab set up near the *garuda-gamba* of Ranganathasvami temple belongs to the reign of Trailokyamalla (Somesvara II). Dated in Saka 975 (AD 1053), it records a gift of 25 *mattars* of land at Revadikunda situated below the tank named Diggigere to god Karnnesvaradeva and also a few more grants such as an oil-mill, a garden and a house-site for the *mahabrati* Davanasiva-bhatara by *mahaman dalesvara* Ammanadeva who was administering Nittarave-70 and *maha-samanta* Kannarasa of the Sinda family.

23. KALYANA CHALUKYA INSCRIPTION, SALAGUNDA, DISTRICT RAICHUR.— This Kannada inscription

engraved on a stone set up in the *mukhamandapa* of Srikalakalesvara temple and dated in Saka 1075 (AD 1153), refers to the reign of Mallikarjuna, son of Bhulokamalla. It gives the genealogy of *Nacha-dandanayaka* of Salagunda and registers the construction of a temple by him for the merit of his father Kalidasa-chamupa. A few more gifts were stated to have been given by Bachiga, the urodaya and others, and the three hundred *pramukhas* of the village being the witness for that grant.

24. VIJAYANAGARA INSCRIPTION, SALAGUNDA, DISTRICT RAICHUR.— This record inscribed in Kannada Language and characters and dated in Saka 1450 (AD 1528) belongs to the reign of Rrishnaraya-maharaya. It records that aliya Rammana, the *Karyakarta* of Achchyutaraya made the gift of the village Salugunda, as *sarvamanya* for the merit of King Achchyutaraya.

25. KALACHURI INSCRIPTION, TEKKALAKOTE, DISTRICT RAICHUR.— This undated record engraved on a stone kept in Basavesvara temple belongs to the reign of Bijjaladeva and records the construction of three temples viz., Siddhanathadeva, Narasimha and Vinayaka, and some gifts of lands for worship, and *anga-ranga-bhoga* services by his *mandalika* Rachamallarasa and his officer Ketayasahani.

MADHYA PRADESH

26. INSCRIPTION, KHANDWA, DISTRICT EAST NIMAR.— This inscription in Sanskrit language and in Nagari characters, engraved on the southern wall of the Padma-kunda is dated Vikrama 1189 (AD 1132). It records the gift of a beautiful image of Vishnu by Markkannda belonging to the Kasyapa-gotra probably for the welfare of his mother.

27. SATI INSCRIPTION, MUNDI, DISTRICT EAST NIMAR.— This inscription in local dialect and Nagari characters engraved on a pillar in the Renukamata mandir, is dated Vikrama 1385 (AD 1328). It records the commission of *sati* near a well by a lady probably named Sakasau who was daughter of Sokasano.

MAHARASHTRA

28. NAGARI INSCRIPTION, HATI, DISTRICT AURANGABAD.— An eight line painted inscription in Sanskrit language and Nagari characters was noticed on one of the walls of an eighteenth century temple.

29. NAGARI INSCRIPTION, LASUR, DISTRICT AURANGABAD.— Of the two Nagari inscriptions, one runs into two lines and is dated in the Saka year 1571 (AD 1659). It is inscribed on a dressed stone on the banks of the river Sivana. The second inscription contains eight lines and is inscribed on a stone at the courtyard wall of the Durga temple.

30. NAGARI INSCRIPTION, PAL, DISTRICT AURANGABAD.— A two line inscription was noticed on the beam of the *mandapa* of a Hemadpanti temple.

31. BRAHMI INSCRIPTIONS, KOL, DISTRICT RAIGARH.—The Brahmi inscriptions from Kol record the gifts made by Sivadata who was the son of Dhamasiri. Another Brahmi inscription from Junnar records the gift of a 'Podhi' by Yajnala in the memory of his mother. The donor Yajnala was a brahmin who was well-versed in 'Kramapatha'.

ORISSA

32. EASTERN GANGA INSCRIPTION, PURI, DISTRICT PURI.— This inscription engraved on the right doorjamb of the Narasimha shrine in the Jagannatha temple complex, is in the Sanskrit language and Gaudiya characters. It belongs to the reign of the Eastern Ganga King Anantavarmana- Chodaganga and is dated in Saka 1049 (AD 1127). It records that Potaya, son of Dhikkellasura who was an attendant of king Anantavarma entrusted a sum of five *nishkas* to the farmers residing at Madopura for maintaining a perpetual lamp to the god Purushottama. A copy of this record is engraved in the Telugu characters just above the Sanskrit record in question.

RAJASTHAN

33. CHAHAMANA INSCRIPTION, MANDALGARH, DISTRICT BHILWARA.— This inscription is engraved in Sanskrit language and Nagari characters on a stone slab fixed in a field near the electric power house. It is dated Vikrama 1234 (AD 1177) and belongs to the reign of Prithviraja III of the imperial Chahamana dynasty. It records the gift of a tax-free land measuring *hala 2* and belonging to *Sreshthi* Haripala of Mamdalakara (i.e. Mandalgarh) by Pamchakula.

34. NAGARI INSCRIPTION, MANDALGARH FORT, DISTRICT BHILWARA.— This inscription engraved on the pedestal of an image of Santinatha kept in the Rishabhadeva mandir, is in Sanskrit (corrupt) language and Nagari characters. It is dated in Vikrama 1190 (AD 1133) and records the obeisance of a lady named Sarasati to Santi-jina.

35. PILLAR INSCRIPTION, MANDALGARH FORT, DISTRICT BHILWARA.— This memorial inscription engraved on a square pillar of the *mandapa* of the Bijasan-mata-mandir on the hill, is in Sanskrit (corrupt) language and Nagari characters. It is dated in Vikrama 1423 (AD 1367) and records the heroic death of Jajava, the Hada Chahamana ruler in battle while fighting against the Chaulukya forces.

36. SATI INSCRIPTION, MANDALGARH, DISTRICT BHILWARA.— This inscription engraved on a stone slab kept on the road side near a tank, in Sanskrit (corrupt) language and Nagari characters, is dated in Vikrama 1533 (AD 1477). It records the performance of *mahasati* by Holn, the wife of Rajaputra Mota, on the latter's death.

37. BRASS IMAGE INSCRIPTION, MANDALGARH FORT, DISTRICT BHILWARA.— This inscription engraved on the back side of a brass image kept in the Rishabhadeva temple is in Sanskrit language and Nagari characters. It is dated in the Vikrama year 1586 (AD 1529) and records

that this image *(bimbam)* was caused to be made by Jayata and his family members of Babala-*gotra* and Usavaljnati for the merit of a person (name not clear) and its consecration by a Suri (name not clear) belonging to Mula-samgha.

38. COPPER - PLATE INSCRIPTION, SINGOLI, DISTRICT BHILWARA.— This is a single copper plate charter engraved in local dialect and Nagari characters. It is dated in Vikrama 1444 (AD 1388) and records the gift of 224 *bighas* by Maharana Raghamal to the deity Chaturbhujaji (i.e., Sri Krishna).

39. INSCRIPTION, BITHORA, DISTRICT PALI.— An inscription dated in Vikrama 1914 was noticed on a *chhatri* at village Bithora, District Pali. The inscription is related to the first War of Independence fought in AD 1857.

40. INSCRIPTION, NADIYA, DISTRICT SIROHI.— A Jain inscription of the eighth century AD was noticed at this place.

41. MISCELLANEOUS INSCRIPTIONS, DISTRICT SIROHI.— More than 100 inscriptions which belong to eleventh to sixteenth century AD, were noticed in different places of this district. The in scriptions are related to Chauhana and Paramara dynasties and inscribed in Sanskrit and local dialects.

TAMIL NADU

42. PANDYA INSCRIPTION, SENGUNRAPURAM, DISTRICT KAMARAJAR.— This Tamil inscription engraved on the doorjamb of a dilapidated Siva temple is dated in the eleventh regnal year (AD 1226-27) of Maravarman Sundarapandya who assumed the title *Sonadu-kondaruliya.* It states that Kamban Perran of the *nagara* caused the doorjamb *(tirunilaikal),* steps *(padi)* and the balustrade (?) *(pediyadai)* of the *ardhamandapa* in the temple of Kayilasam-narpattenayira Isvaram-udaiya-nayanar of Abimanamerupuram in Sengudi-nadu. The engraver of the record was Chokkandevan *alias* Samaya-mantri-achari, the mason of this *temp\e(Koyirtachcha chary an).*

43. TAMIL-BRAHMI INSCRIPTION, METTUPPATTI, DISTRICT MADURAI.— This inscription engraved on the top of the entrance of the cave on the hill locally called as *Siddharnattam* in Tamil and Prakrit languages and in Tamil-Brahmi script of about the third - second century BC. It states that it was the abode(urai) of utayana an *amanan (sramana)* and was the gift of Attinan of Matirai (Matirai).

44. CHOLA INSCRIPTION, SIYAMANGALAM, DISTRICT NORTH ARCOT.— Engraved on a natural rock inside the outer enclosure, southern side of the rock-cut Siva temple, this inscription in Tamil language and characters and composed in *Sanda Viruttappa* metre is dated in the twelfth regnal year of Rajaraja III (AD 1228-29). It extols a certain Ammai Appan Kilirai Atigaman by comparing him with Pari, a chieftain of the Sangam age, for the following munificent gifts

made by him to the deity enshrined in the temple *(Ohanmichcharam)* at Siyamangalam. The gifts are (1) creation of a street *tiruviti* around the hill in which the temple is situated for the purpose of taking the temple elephant in procession, (2) institution of a flower *garden(nandavanam),* (3) excavation of a tank(uari) in front of the temple, (4) construction of sluice *(madagu)* to it and (5) building of a tower enclosure *{gopura madil),* etc.

45. KONGU PANDYA INSCRIPTION, KILUR IN THE BODAI MALAI MOUNTAINS, DISTRICT SALEM.— En graved on an imposing natural rock in the middle of the village, this inscription in Tamil Language and characters, is dated in the fourteenth regnal year of Virapandya (AD 1279-80). The object of the inscription is the standardisation of taxation, due to the kingdom from the people living in various mountains in the territorial division called Rasipurapparru. The inscription which was a *firman* issued by the king states that the residents of the village called Sukkanpundi in Karumgali-malai deserted the village as they could not pay the tax called *urkadamai* and records that the members of the *sabhai, nadu and nagaram* of Rasipurapparru resolved to collect, since the fourteenth regnal year of the king, only annual tax at the rate of one *panam* per kudi, on par with the rate *viz., Kollimalai mariyadi,* paid by the people living in the neighbouring Kollimalai mountains in the same territorial division.

46. PILLAR INSCRIPTION, UDAIYALUR, DISTRICT THANJAVUR.— This Tamil inscription, engraved on a circular pillar set up at the right entrance of the Palkulattamman temple on the south bank of a tank in the village, is dated in the forty-second regnal year (AD 1112) of Kulottunga I and records the renovation of a *mandapa* in front of Rajarajadevar alias Sivapadasekhara-mangalam by three individuals who were holding the office of ur-nayakam, on behalf of Arikesavan *alias* Kachchirayar of Sattamangalam in Kulamangala-nadu, a sub-division of Jayasingakulakala-valanadu. The phrase 'elundarulininra Sri Rajaraja' in this inscription prompts us to surmise that the temple under reference should have been a memorial one to that great monarch of the Chola dynasty.

47. TAMIL INSCRIPTION, ALUNDUR, DISTRICT TIRUCHCHIRAPALLI.— This Tamil record in verse Innisai Venba metre is in Tamil language and characters of the eleventh century AD. It seems to record the setting up of the *jalaka (salaka)* of the Varaguna Vichchara-mandapa, wherein the record is engraved.

48. TAMIL INSCRIPTION, ALUNDUR, DISTRICT TIRUCHCHIRAPALLI.— **This record in Tamil language** and characters of the twelfth-thirteenth century AD states that **the roof** tiles *(tattodu)* of **the** *mandapa* were caused to be laid by Valaippadikappan Valaiyan Sum Si Endan *alias* Peri-yanattu Muttaraiyan, who had a *kani* in the village.

49. INSCRIPTION OF NAYAKAS OF MADURAI, TIRUCHCHIRAPALLI, DISTRICT TIRUCHCHIRAPALLI.— This inscription engraved on a slab built into the sluice of uyyakkondan-Vaykkal, is in Telugu language and characters. Dated in Saka 1[6]26 (AD 1704) and belonging to the reign of Mamgamma, wife of Visvanatha-nayani Chokka-nayani, it registers the construction of a sluice

(kaligu) by Damnappayya, younger brother of Dalavayi Narasappayya and son of Timmap-payya belonging to Bharadvaja-gotra and Asvalayana-sutra.

50. PANDYA INSCRIPTION, URAIYUR, DISTRICT TIRUCHCHIRAPALLI.— This damaged Tamil inscrip tion engraved on the doorjamb of the *ardhamandapa* of Tantonrnsvara temple is in Tamil language and characters. Dated in the fourth year opposite to the ninth year (4=9) of Pandya king Maranjadaiyan *alias* Varaguna-maharaja, it seems to register the sale of land in the village Varagur by the Perunguri-sabhai of the Nandiparmma-mangalam, for a price value of 120 palan-kasu. It further registers the gift of the same land to the temple by the king through a certain Andanattu-Velan and the money received by the sale by the *sabhai* was divided into three shares which include two shares of price-value and a share of irai-kaval (tax).

UTTAR PRADESH

51. JAINA IMAGE INSCRIPTION, BANAPURA, DISTRICT LALITPUR.— This inscription engraved in two parts on the two sides of a standing image in the Digambara Jaina temple is in Sanskrit language and *Nagari* characters. It is dated in Vikrama 100KAD 944) and evidently records the making of a shrine *(gandhakuti)* and an image of Chakresvara, by the merchant Gamgila, described as Gauravanika, together with his father Jinachandra, mother Mauli and other relatives.

52. Two STEP-WELL INSCRIPTIONS, PALI, DISTRICT LALITPUR.— The two inscriptions are in Sanskrit language and Nagari characters. The first engraved on a stone slab set up in a niche inside a step well called Chandabavadi is dated in Vikrama 1799 and Saka 1664 (AD 1742) and refers to the reign of *Maharaja* Durjanasingha. It records the construction of a step-well and a shrine for Siva at the village of Pali, by Pam Lalchanda, son of Pam Tivari Harinarayana and grandson of Pamo Visvadeva Tivari who is described Mamunarasi (Maunarasi).

The second inscription engraved on a stone slab inside a second step-well in the village is in Sanskrit language and Nagari characters and dated in Vikrama 1865 and Saka 1730, Pramati, (AD 1808). It records the construction of a well at Pali in the reign of *Maharaja* (Haripalasingha) son of *Maharaja* Amanasingha and grandson of *Maharaja* Joravalasingha.

ARABIC AND PERSIAN INSCRIPTIONS[1]

ANDHRA PRADESH

1. MISCELLANEOUS INSCRIPTIONS, DISTRICT KURNOOL.— An inscription from Ellardi, records the construction of a mosque by 'Ambar (a slave) of Mas'ud (Khan) in AH 1099 (AD 1687-88).

[1]Information from N.M. Ganam, who was assisted by M.F. Khan. S.S. Hussain and M.Y. Quddusi, M.I. Quddusi and G.S. Khwaja, of the Epigraphy Branch of the Survey, Nagpur, who found, copied, examined and reported on one hundred and eighty three inscriptions during the year. Of these, important ones are noticed here.

Another epigraph of the same builder recording the construction of a well in AH 1099 (AD 1687-88) was found at Kottapetha.

2. MISCELLANEOUS INSCRIPTIONS, DISTRICT MEDAK.— An inscription from Masaipet executed in beautiful *Thulth* characters, records the construction of a mosque in AH 1038 (AD 1628-29) by the pious, austere and devout lady named Bija (or Pija) Khair Nisa (i.e. Khair-u'nnisa) daughter of the deceased Mir Qutbu'd-Din Ni'matullah Yazdi. A record on five loose wooden planks from Narsingi, states that this mosque of lofty foundation was completed and beautified at the order of Muhammad Bilal Khan in AH 1122 (AD 1710-11). The text was written by Muhammad Siddiq. According to an epigraph from Tarkhanpet, Amiru'd-Daula Tahir Khan Bahadur founded a residential quarter in AH 1188 (AD 1774-75) and named after him as Tahirnagar.

BIHAR

3. MUGHAL INSCRIPTION, CHHAPRA, DISTRICT SARAN.— This epigraph records the construction of a Drum House *{Naubat Khana)* in AH 1234 (AD 1818) by 'Ali Bakhsh' who is stated to be the slave of His Highness, the emperor (i.e. Akbar II).

4. INSCRIPTIONS, CHHAPRA, DISTRICT SARAN.— This inscription records the construction of a mosque in AH 1213 (AD 1798-99) by Imam Bakhsh, the *Nazir* (Superintendent). Another epigraph from the same place, records the construction of a house i..e. Imam Bara) for lament ing the death of Hasan and Husain in AH 1230 (AD 1814-15) by 'Ali Bakhsh' of noble character. According to another record from the same place, Babu 'Ali Bakhsh', son of Imam Bakhsh, the *Nazir* (Superintendent), constructed the *Kachheri* (office building) for *Ahl-i- Qalam* (lit. men of pen) in AH 1238 (AD 1822-23). Yet another epigraph from the same place, records the construction of a mosque by Sabza Naqqali in AH 1260 (AD 1844-45); its chronogram was composed by Farid.

DELHI

5. INSCRIPTION OF THE MAMLUKS, DELHI.— This interesting epigraph transcribed in *Naskh* characters, records the construction of a mosque in AH 685 (AD 1286) in the time of the great Sultan Ghiyathu'd-Dunya wa'd-Din Abu'l-Muzaffar Balban, the Sultan, by Muhammad Maliki Nizami *alias* Pisar Khwanda, the adopted son (pl. XXXIB).

6. INSCRIPTION, DELHI.— The record states that this reservoir *(Saqqa-Khana),* was con structed by Mir Muhammad Sharif al-Husaini in AH 976 (AD 1568-69) for the pleasure of God and to bless the souls of the martyred Hasan and Husain. Its text was written by Ibrahim Safa'i.

MAHARASHTRA

7. INSCRIPTION, SHOLAPUR, DISTRICT SHOLAPUR.— A slightly damaged metrical epigraph in scribed on a loose pillar, records the construction of a fort of Mangalvedha spelt in the text as Manjlavadar and the reservoir of water by Khwaja 'Ala (or Ula) son of Nizam, the *mu-tasarraf* (revenue collector) of the *mu'amala* (District) of Sandalapur (i.e. Solapur) in AH 798 (AD 1395-96).

UTTAR PRADESH

8. MISCELLANEOUS INSCRIPTIONS, DISTRICT AGRA.— A badly damaged epigraph from Fatehpur Sikri, records some construction by the slave of the court, named Jamalu'd-Din Khan in AH 1008 (AD 1599-1600). An epitaph recording the demise in AH 1210 (AD 1795-96) of a saint Bedar, a descendant of Faridu'd-Din Ganj Shakar was found at Agra.

9. INSCRIPTIONS OF THE MUGHALS, DISTRICT GHAZIPUR.— A record of the time of Shahjahan from Shadiabad states that a mosque was constructed in AH 1061 (AD 1651) during the governor ship of Mirza Bihram, son of Yusuf Khan by Hasan Khan (son of) Daulat Khan. A metrical inscription, on three loose pieces of stone, of Aurangzeb records the completion of a portico on the bank of a stream in AH 1105 (AD 1693-94). Its text was written and its chronogram was composed by Yusuf.

10. MISCELLANEOUS INSCRIPTIONS, DISTRICT GHAZIPUR.— A metrical epigraph from Sarai Murad Ali (Saraiyya), records the construction of the house for religious learning (i.e. *Madrasa)* in AH 984 (AD 1576-77) by Shaikh Ahmad who is described as a scholar. The text was composed and written by Asiri. A record from Bahirabad, states that Sadr-i-Jahan constructed the house of god (i.e. a mosque) through the purity of his efforts in AH 1149 (AD 1736-37). A metrical epitaph from Ghazipur, records the martyrdom of Sher 'Ali in AH 1222 (AD 1807-08). The inscription also mentions the name of one Rida who composed the record. Another epigraph from the same place, records the construction of the tomb of Sayyid Salar Mas'ud Ghazi by Imam Bakhsh and Pir Bakhsh in AH 1225 (AD 1810-11).

11. MISCELLANEOUS INSCRIPTIONS, DISTRICT HARDOI.— A fragmentary epitaph from Bilgram, records probably the death of a person (name not legible) in AH 808 (AD 1405-06). An epitaph from the same place, registers the death of Mihir 'Ali in AH 1182 (AD 1768-69). A record from Pihani, states that Mir Muhammad Quli constructed the tomb *(Rauda)* of Bibi Kunda in AH 1216 (AD 1801-02). She died according to her epitaph at the same place in AH 1215 (AD 1800-01). A record from Bilgram states that Mehdi 'Ali Khan who was Shi'a by faith constructed the Imam Bara in AH 1223 (AD 1808-09). An epigraph from Sandila records the construction of the mosque and the mausoleum of Nihal Shah by Turrabaz Khan in AH 1233 (AD 1817-18). According to an inscription from Bilgram, Nithar Husain constructed a well in AH 1247 (AD 1831-32). A bilingual inscription from Bawan, records the construction of a *Shivala* (i.e.

a Siva temple) by Asa Ram in AH 1258 (AD 1842-43). An epigraph from Sandila, states that Chaudhari Masnad 'Ali of high lineage laid the foundation of a mosque in AH 1253 (AD 1837-38), but as he died in AH 1257 (AD 1841-42), the construction of the mosque was completed by Hashmat 'AH and 'Azmat 'Ali in AH 1259 (AD 1843). According to an epitaph from the same place, Chaudhari 'Azmat 'Ali, the *Ra'is* (i.e. Chief) of Sandila died in AH 1265 (AD 1849). Another epigraph from the same place, records the reconstruction of an old mosque in AH 1276 (AD 1859-60) by Mir Talib Hasan.

12. MUGHAL INSCRIPTION, SAHARANPUR, DISTRICT SAHARANPUR.— This metrical record of Shahjahan refers to the construction of a *Sarai* (i.e. inn), a bridge and a mosque by Ghaith 'Ali Baig in AH 1054 (AD 1644-45).

13. MISCELLANEOUS INSCRIPTIONS, DISTRICT SAHARANPUR.— An epigraph from Piran Kalyar, records the construction of the gate and the compound of the tomb by Muinu'd-Din Khan in AH 1231 (AD 1815-16). According to the inscription from Saharanpur, a mosque and a well were built by Sayyid Muhammad Shah in AH 1258 (AD 1842-43); its chronogram was composed by Dhauq.

14. INSCRIPTIONS OF THE MUGHALS, DISTRICT SHAHJAHANPUR.— Of the two records of Aurangzeb from Kant, one refers to the construction of the *Khanqah* (hospice), the mosque, the well and the garden in AH 1079 (AD 1668-69). The name of the builder is not specified. According to another record, a mosque was constructed by 'Abdu'r-Rahman in AH 1086 (AD 1675-76).

15. MISCELLANEOUS INSCRIPTIONS, DISTRICT SITAPUR.— An epigraph from Bisendi, records the construction of the mosque for the prayers of the two *'Ids* (i.e. the 'Idgah), the garden and the tank during the governorship of Nawwab Mu'tamid Khan by Mumtaz in AH 1041 (AD 1632). It further invokes prayers for the safety and the long life of the Nawwab. A record from Bari refers to the construction of the mosque designated as Makka *{sic)* Masjid by one Ramzu in AH 1259 (AD 1843); its chronogram was composed by Manglu. An inscription from Aurangabad, records the construction of a mosque for offering prayers by Agha Jan in AH 1276 (AD 1859-60). A metrical record from Nimsar states that Dharam constructed a mosque in the time of Agha Jan in AH 1280 (AD 1863-64). Its chronogram was composed by Abid Ali.

WEST BENGAL

16. MUGHAL INSCRIPTION, MURSHIDABAD, DISTRICT MURSHIDABAD.— This metrical epitaph records the death of Muhammad Sharif in the 51st regnal year (of Aurangzeb) corresponding to AH 1118 (AD 1706). The text was written by Yar 'Ali Baig Badakhshi.

17. MISCELLANEOUS INSCRIPTIONS, DISTRICT MURSHIDABAD.— An epigraph from Murshidabad, records the construction of a mosque in AH 1187 (AD 1773-74) by Miyan Ambar who is stated to have belonged to a noble Sayyid family. Another epigraph from the same place, records the

construction of an illustrious mosque in AH 1203 (AD 1788-89) by Karimu'n-Nisa Khanam daughter of Badi'u'z-Zaman Baig and wife of the deceased Sher Yazdan Khan. One more inscription in verse from the same place, states that a mosque was founded by Sayyid Sadiq 'Ali of high lineage. But as he died when the mosque was not completed, it was completed by Nadhir Khan of lofty dignity in AH 1266 (AD 1849-50). Its chronogram was composed by Masiha. According to the metrical record from the same place, Darab 'Ali Khan, the *Nazir* (Superintendent) of the Nawwab constructed a mosque in AH 1269 (AD 1852-53), at the precepts of the deceased Sayyid 'Ali 'Azim, the physician and the theologist and under order of Khwaja Muhammad Husain Khan Sakhi, the *amin* of the Nawwab Nazim and who performed the pilgrimage *(Haj)* of the House of God (i.e. Mecca). The text was composed by Safir. Yet another epigraph from the same place records the construction of a mosque by 'Umda Begam in Bangla (i.e. Bengal Fasli) year 1260 corresponding to AH 1270 (AD 1853-54).

18. EPITAPHS, MURSHIDABAD, DISTRICT MURSHIDABAD.— A few epitaphs were found in the family graveyard of the Nawwabs of Murshidabad. They supply interesting information about these rulers as well as their kinsmen. Some of the deceased mentioned are : Nawwab Mutaminu'l-Mulk, Sayyid Mubarak 'Ali Khan, Mubaraku'd-Daula Bahadur Firuz Jang, the Nazim of Bangala who died in AH 1208 (AD 1793), Mir Muhammad 'Ali who died in AH 1243 (AD 1827-28); Waziru-Nisa Begam who died in AH 1251 (AD 1835-36); Shuja'u'1-Mulk Ihtishamud-Daula Humayun Jah, the Nawwab Nazim who died in AD 1838. His accession date is mentioned as Bangla (Fasli) year 1233 corresponding to AD 1824; Shamsu'1-Mulk Diyau'd-Daula, Nawwab Sayyid Jafar 'Ali Khan Bahadur Nasir Jang son of Najmul-Mulk Roshanud-Daula Ali Khan Bahadur Nasir Jang who died in AD 1863 and Azimun-Nisa Begam *alias* Nishani Begam, daughter of Akas(?) Nawwab Nazim Baig and wife of Nawwab Sayyid Muzaffar Ali Khan, the *Rai* (chief) of Raja Bazar, Murshidabad who died in AD 1884.

III. NUMISMATICS AND TREASURE TROVE[1]

GUJARAT

1. ANCIENT COINS, PAVAGARH, DISTRICT PANCHMAHALS.— Seven square and circular copper coins in the vicinity of Pavagarh were collected, four of which have been identified as Ujjayni one bearing a legend *'ayamitasa'* and rest are illegible punch-marked coins.

HARYANA

2. COPPER COINS, KHARAKHERI, DISTRICT BHIWANI.— Six hundred copper coins belonging to some Samanta Deva have been acquired as treasure trove.

3. SILVER COINS, TOHANA, DISTRICT HISSAR.— Thirty four-silver coins belonging to Sultanate period have been recovered from Tohana Police Station.

4. SILVER COINS, SIRSA, DISTRICT SIRSA.— Five hundred and twenty-three silver coins belong ing to British period have been acquired from Sirsa Police Station.

KARNATAKA

5. GOLD BEADS, SILVER WAIST-BAND AND COINS, DISTRICT BELLARY.— Sixty-seven gold beads and four gold pieces from Nelkudr and five gold coins of Vijayanagara kings from Venkarpur have been collected. Further two hundred and one coins of queen Victoria, Edward VII and William IV and one silver waist-band from Holalu have been acquired as treasure trove.

6. COINS, MAGGALAMAKKI, DISTRICT CHIKKAMAGALUR.— Forty nine coins of queen Victoria, two of George V and one of Edward VII have been acquired as treasure trove.

7. COINS AND GOLD MEMENTO, MALLIPALLI, DISTRICT KOLAR.— Two large coins belonging to Hyder Ali/Tipu Sultan having Persian legends both on obverse and reverse; two large coins having Siva - Parvati on obverse and a legend in Persian on reverse belonging to Hyder Ali; five large plain coin like pieces, one coin having standing god flanked by two goddesses on the obverse and seventeen fanam from Mallipalli have been acquired as treasure trove.

[1]Information from: 1, Vadodara Circle of the Survey; 2-4, Directorate of Archaeology and Museums, Haryana; 5-7, Directorate of Archaeology and Museums, Karnataka; 8-9, Aurangabad Circle of the Survey; 10, Orissa State Museum, Bhubaneswar; 11, Jaipur Circle of Survey; 12-15, Department of Archaeology and Museums, Rajasthan; and 16, Calcutta Circle of the Survey.

MAHARASHTRA

8. COPPER COINS, DAULATABAD, DISTRICT AURANGABAD.— Forteen Muslim copper coins were col lected from the vicinity of Daulatabad.

9. COPPER COINS, KARLE, DISTRICT PUNE.— Six circular copper coins were collected from the environs of Karle, five of which belong to Shivaji.

ORISSA

10. SILVER ORNAMENTS, SANKARPUR, DISTRICT BALASORE.— Four silver quarter rupee coins of Shah Alam have been acquired by the State museum. In addition a hoard of traditional broken and fragmented parts of old silver ornaments weighing approximately 2.5 kg have been collected from Bhadrak Police Station which was discovered during excavation of a tank in the village Sankarpur of Bhadrak town and kept in the State museum.

RAJASTHAN

11. TUGHLAQ COINS, CHITTAURGARH, DISTRICT CHITTAURGARH.— Sixty-six copper coins belonging to Tughlaq rulers were found.

12. COINS OF FIRUZ SHAH TUGHLAQ, CHITTOR, DISTRICT CHITTAURGARH.— Eight hundred and fifty-seven copper coins were acquired as treasure trove.

13. KUSHANA COINS, DADA FATEHPUR, DISTRICT JHUNJHUNU.— A hoard often gold coins of later Kushana rulers from Dada Fatehpura were aquired as treasure trove.

14. COINS OF ALAMGIR II, DAULATPUR, DISTRICT UDAIPUR.— One hundred and sixty-three copper coins of Alamgir II were acquired and kept in the Government Museum, Udaipur.

15. COINS, JHADOL, DISTRICT UDAIPUR.— Two hundred and twenty-four copper coins belonging to the Gujarat Sultans were acquired as treasure trove.

WEST BENGAL

16. COPPER OBJECTS, LAYEKPARA, DISTRICT BANKURA.— Two shouldered celts of copper, one partly broken and other complete, presently lying at Simlapal Police Station, were recovered.

IV. OTHER IMPORTANT DISCOVERIES

ANDHRA PRADESH

1. SCULPTURES, HEMAVATI, DISTRICT ANANTAPUR.— The Hyderabad Circle of the Survey found a few sculptures datable on stylistic grounds to the Nolamba period (AD850-1000). Of these, the sculptures of Ganesa and Bhairavi are worth mentioning.

GOA, DAMAN AND DIU

2. MISCELLANEOUS OBJECTS, MOTI DAMAN, DISTRICT DAMAN.— Vasudevan Nair and Vijayan Pillai of Vadodara Circle of the Survey during the debri clearance from the Church near north western corner of Moti Daman collected a weathered copper coin bearing Nagari script, Celadon ware, terracotta ball and a small circular polished object in semi-precious stone.

3. ANTIQUITIES FROM SAFA MASJID TANK, PONDA, DISTRICT GOA.— During the process of desilting of the water cistern at Safa Masjid by the Mini Circle, Goa, under Aurangabad Circle of the Survey, discovered variety of objects such as brass emblem of warship, Portuguese and British coins, smoking pipe, silver and copper rings with embedded stones, beads, amulets, seals, arms, ornaments, architectural fragments, clay pot, skeletal remains and religious and decorative objects.

GUJARAT

4. IMAGE OF SURYA, PADARSINGA, DISTRICT AMRELI.— R.D. Singh and Narayan Vyas of Vadodara Circle of the Survey collected one small image of standing Surya in the village belonging to thirteenth-fourteenth century AD.

5. SCULPTURES, STEP WELL AND TANKS, BHAGAPURA AND VASVEL, DISTRICT VADODARA.— Narayan Vyas, Vilas Jadhav and N.B. Soni of the Vadodara Circle of the Survey came across a number of sculptures and architectural fragments of a temple of twelfth-thirteenth century in the vicinity of the villages. One step-well and two ancient tanks were also noticed at Bhagpura.

6. IMAGE OF CHAMUNDA, GORAJ, DISTRICT VADODARA.— R.D. Singh, Narayan Vyas, Vilas Jadhav and A.R. Shah of Vadodara Circle of the Survey collected a beautiful image of six-armed standing Chamunda, datable to eleventh-twelfth century AD.

7. ANCIENT PATHWAY, JHAVERPURA, DISTRICT VADODARA.— Anand Sastry and Narayan Vyas of Vadodara Circle of the Survey noticed the remnants of an ancient pathway of dressed stones and boulders.

8. STONE TOOLS, MUVADA, DISTRICT VADODARA.— Narayan Vyas of the Vadodara Circle of the Survey collected a number of stone handaxes, cores, flakes, *etc.* from the bed of the Deo river.

HARYANA

9. SCULPTURE, BADAULI, DISTRICT AMBALA.— A mutilated four-handed Mahishasuramardini, in of sixth century has been discovered by the Department of Archaeology and Museums, Government of Haryana.

10. MEDIEVAL SCULPTURE, UCHANA, DISTRICT JIND.— One sculpture of the Uma-Mahesvara in buff sandstone has been collected by the Department of Archaeology and Museums, Govern ment of Haryana.

11. MEDIEVAL SCULPTURE, KONAD, DISTRICT KARNAL.— A buff sandstone sculpture of four handed seated Ganesa with two flying Vidyadharas on either side of his halo, datable to ninth-tenth century AD has been found by the Department of Archaeology and Museums, Govern ment of Haryana.

12. MEDIEVAL ARCHITECTURAL MEMBER, BHAGHAL, DISTRICT KURUKSHETRA.— A medium-sized square carved pillar, made of buff sandstone of *circa* tenth century has been found by the Department of Archaeology and Museums, Government of Haryana.

13. MEDIEVAL SCULPTURE, SIRSA, DISTRICT SIRSA.— A beautiful image of eight-handed Mahishasuramardini made of buff sandstone has been collected by the Department of Archaeology and Museums, Government of Haryana.

14. MEDIEVAL SCULPTURES, GUJJAR KHERI, DISTRICT SONEPAT.— One sculpture each of four-handed Mahishasuramardini and standing Surya with his attendant, made of buff sandstone and belonging to the Gurjara-Pratihara art of *circa* ninth-tenth century AD have been acquired by the Department of Archaeology and Museums, Government of Haryana.

JAMMU AND KASHMIR

15. NEOLITHIC CELT, KANISPUR, DISTRICT BARAMULLA.— During the course of exploration R.C. Aggarwal, S.N. Jaiswal and R.N. Kaw of the Srinagar Circle Survey discovered a neolithic celt. Besides, pot-sherds of early Kushana and medieval period ware also picked up.

16. MEDIEVAL SCULPTURE, JAMMU, DISTRICT JAMMU.— During the course of digging of founda tion of a house a mutilated standing sculpture of Ganesa (pl. XXXIIA) was noticed by the Srinagar Circle of the Survey.

17. MEDIEVAL SCULPTURES AND OTHER REMAINS, MAKHANPUR GUJRAN, DISTRICT JAMMU.— S.N.

Kesarwani and Balbir Singh of the Srinagar Circle of the Survey noticed an image of Ganesa, *Siva-linga* and pottery of Kushana and medieval period at Makhanpur Gujran near Mira Sahib.

18. ROCK-CUT MAITREYA, APATI, DISTRICT KARGIL.— R.S. Fonia and R.N. Kaw of Srinagar Circle of the Survey noticed a rock-cut Maitreya (pl. XXXIIB) belonging to fifteenth-sixteenth century.

19. CLAY TABLETS FROM TISERRU, LEH (LADAKH).— During the course of removal of earth from upper and lower circular terraces of the stupa, by the Srinagar Circle of the Survey located numerous clay votive tablets depicting Buddhist gods and goddesses and votive stupa.

20. MEDIEVAL SCULPTURE, KIRAMCHI, DISTRICT UDHAMPUR.— During the course of restoration of temple 5 by the Srinagar Circle of the Survey at Kiramchi a small sculpture depicting king and queen seated on a throne (pl. XXXIII) was found in the debris of the temple.

21. MEDIEVAL SCULPTURE, NAND BABORE, DISTRICT UDHAMPUR.— A fine sculpture of Ganesa was found during the course of removal of mud by the Srinagar Circle of the Survey on the side of the temple in a water pond. The sculpture is datable to tenth century.

22. MEDIEVAL SCULPTURES AND OTHER REMAINS IN DISTRICT UDHAMPUR.— During the course of exploration in District Udhampur, S.N. Kesarwani and Balbir Singh of the Srinagar Circle of the Survey noticed early medieval temple and sculptures at Garh Dhamma in tehsil Ramnagar, Kushana and late medieval pottery at Purana Daruhar near Hansali, fortress and memorial stones at Tarakot and a *baoli* at Garhi Kalka near Katra (all in tehsil Riasi) all belonging to late medieval period. While removing the accumulated earth inside the Ramnagar fort various types of cannon balls, iron hinges and nails, pieces of rotary querns, sherds of medieval pottery and pieces of iron sword were found.

KARNATAKA

23. RING-WELL AT HAMPI, DISTRICT BELLARY.— Near the north-eastern corner of the Hampi Museum building at a distance of 2 metres from the northern wall, a terracotta ring-well cut into the natural bedrock was exposed by the Museums Branch of the Survey while clearing the debris for the purpose of installing water tank. There are in total nine rings kept one above the other on the bottom bedrock surface (2.5m below the ground level). The top four of them are much damaged and the remaining one are *in situ* and comparatively intact. They have an average diameter of 0.8m and 0.5cm thick at the rim portion. The structure probably used as a socket pit is in confirmity with those exposed in regular excavation at Hampi.

24. COPPER PLATES AT KARUR, DISTRICT BIDAR.— The Birla Archaeological Research Institute, Hyderabad, has acquired a duplicate set of three new Vakataka copper plates found in a village

Karur, Taluq Bhalki of District Bidar. The record begins with the words *Siddham namah* and introduces the genealogy of Vatsagulma branch of Vakatakas with the first king Dharmama-haraja Vindhyasakti and others following him. The charter was issued during the 30th regnal year of the last mentioned king Devasena, son of Sarvasena. The importance of the record lies in the name of the father of Devasena as Sarvasena which was not indicated in the earlier published records.

MADHYA PRADESH

25. JAIN SCULPTURES, BADANPUR, DISTRICT DAMOH.— During the clearance of site a few Jaina sculptures of medieval period were found by the Department of Archaeology and Museums, Madhya Pradesh. They are now displayed in the local museum.

26. RUINS OF TEMPLE, VASVI, DISTRICT DHAR.— P.K. Mishra and H. Michael of the Bhopal Circle of the Survey discovered a temple of tenth-eleventh century, black and red ware, Red-slipped ware and buff and chocolate ware. Another temple hewn out of rock was also discovered in the village.

27. INDIRA SAROVAR SURVEY IN DISTRICTS DEWAS AND EAST NIMAR.— The survey party of the Department of Archaeology and Museums, Madhya Pradesh under C. Krishna, assisted by R.R. Singh conducted survey of 25 villages coming under the submersion of Indira Sarowar proposed at Punasa, in the lower Narmada valley. The temples and sculptures at Nemawar, Kundgaon, Karonda Mafi, Chichili, Tamkaran, Rajor and Mandleshwar and fort at Maheshwara and Sarlaya are important discoveries. The temples and sculptures belong to medieval period.

The survey party headed by Sadhana Nayak assisted by O.P. Misra explored the sites at Gulgaon Singaji, Darikotta, Bongarda, Chandel, Reechi M.afi all coming under the sub-merssion area of Punasa Dam. A good number of important sculptures and temples of Parmara period were located.

28. STONE SCULPTURES, BHANPURA, DISTRICT MANDSAUR.— B.L. Nagarch of the Temple Survey Project of the Survey identified sculptures of Andhakantaka Siva, Ganesa standing with his consort,, Revanta riding a horse, Yoganarayana, Harihara, Bhairava, Uma-Mahesvara, Parvati performing penance, Saraswati, Vinadhara Siva, Nataraja, Ardhanarisvara seated in *lalitas-ana,* Lakulisa, Karttikeya and *nandi* besides Jaina Tirthankara images, all assignable to eleventh century kept in the Archaeological Museum at Bhanpura.

29. MEDIEVAL SCULPTURES, HINGLAJGARH, DISTRICT MANDSAUR.— B.L. Nagarch of the Survey noticed the sculptures of Vamana, Durga seated in *lalitasana* on a lion throne, Gomedha and Ambika standing under a tree, Vinadhara Siva, dancing Chamunda, Lakulisa, Rudra-Bhaskara and a number of *sura-sundaris* in various poses such as disrobing, holding a serpent, applying collyrium in the eye in toilet, holding a garment and weeping, besides a sculpture of Brahma-Vishnu and Mahesa and a monkey couple in erotic posture.

30. STONE SCULPTURES, MANDSAUR, DISTRICT MANDSAUR.— B.L. Nagarch of the Survey identified a fragmentary Saptamatrika panel showing Vaishnavi, Varahi, Aindri and Chamunda ascribable to sixth century and sculptures of Sitalamata, Nataraja, Kalyanasundaramurti of Siva, Harihara, Lakshmi-Narayana, and Santinatha all assignable to eleventh century kept in the open-air Museum at Mandsaur.

31. MEDIEVAL SCULPTURES, RAMPURA, DISTRICT MANDSAUR.— B.L. Nagarch of the Survey noticed an image of four-armed Siva standing in *tribhanga* and carrying *varadaksha, damaru* (chopped off), and *kapala* kept on a platform at the back of Police Station, Rampura. It is assignable to eleventh century. In the courtyard of Tehsil office were noticed *bhuta-brackets,* a big *amalaka* and door-jambs of a Paramara temple. They were collected from a site which has been submerged by Chambal dam. An image of standing Harihara holding *trisula* and *chakra* was noticed lying outside the compound of Tehsil Office.

32. BRAHMANICAL SCULPTURES, SEHOR, DISTRICT SEHOR.— A few brahmanical sculptures were found at the outskirts of Sehor city by the Department of Arehaeology and Museums, Madhya Pradesh. They have been kept in the local museum.

33. BRAHMANICAL AND JAINA SCULPTURES, DUNGARPURA, DISTRICT SHAJAPUR.— B.L. Nagarch of the Survey discovered an image of Uma-Mahesvara in a field in village Dungarpura. The portion of the bodies of Uma and Mahesvara above their waist has been chopped off. Below Uma-Mahesvara are carved Ravana uplifting the mountain Kailasa, mount bull, Karttikeya riding peacock and dancing Ganesa. Other image was of a Jaina Tirthankara seated in *padmasana, dhyanamudra* in a field at Dungarpura. The sculpture was found during the course of digging of a well. Both these images are made of sandstone and are assignable to tenth century.

34. JAINA SCULPTURES, SHAJAPUR, DISTRICT SHAJAPUR.— B.L. Nagarch of the Survey noticed twenty-five marble images of Jaina Tirthankaras which were unearthed near the compound of the Girls' Higher Secondary School, Shajapur. These images show Chandraprabha, Adinatha, Parsvanatha, Dharmanatha, Neminatha and other Jaina Tirthankaras. Some of them bear dated inscriptions which range from thirteenth century to seventeenth century. All of them belong to Svetambara sect.

35. BRAHMANICAL AND JAINA SCULPTURES, SUNDARSI, DISTRICT SHAJAPUR.— B.L. Nagarch of the Survey noticed a number of Brahmanical and Jaina sculptures in the vicinity of Mahakalesvara temple, Sundarsi. Noteworthy among the Brahmanical sculptures are pedestal of an image of *yogasana* Vishnu (pl. XXXIV), Uma-Mahesvara seated in *lalitasana* on the mount bull, a Saivacharya seated in *padmasana,* four-armed Lakshmi seated in *lalitasana* on a lotus inside a niche, four-armed *garudasana* Vishnu and four-armed and three-headed seated Brahma. Among the Jaina Sculptures a four-armed Devi standing in *tribhanga* and holding a lotus-stalk by her only surviving upper right hand and two-armed Ambika, Yakshi standing in *tribhanga*

under a mango tree and carrying a bunch of mangoes and a child are noteworthy. An image of eight-armed dancing Ganesa is fixed in the western hall of the Mahakala Ashrama. Besides, two heads, one of an ascetic showing elaborately carved *jata* and other of Siva wearing an elongated *jatamukuta* were also discovered inside the village.

36. RUINS OF TEMPLE AND SCULPTURES, AMAR-KHOHA, DISTRICT SIVPURI.— V.N. Gupta and D.K. Lokhande of the Bhopal Circle of the Survey discovered two sculptures of Jaina *tirthankaras* and three sculptures of Uma-Mahesvara, dancing Ganesa and four-armed Brahma alongwith ruins of a temple belonging to medieval period on the bank of a nullah known as Jhirkho.

37. MEDIEVAL SCULPTURES, JHARDA, DISTRICT UJJAIN.— B.L. Nagarch of the Survey identified sculptures of Bhairava and Lakulisa at Kochi, sculpture of two-armed Chandra lying on Madhava Singh's Odi, sculptures of a seated *nandi* and Ganesa kept in the compound of Siva temple and sculptures of Vamana, Bhairava, Gauri and Chamunda in the compound of Government Middle School, Jharda.

38. MEDIEVAL SCULPTURES, MAKLA, DISTRICT UJJAIN.— B.L. Nagarch of the Survey noticed sculptures of Kamadhenu, Vamana and a fragmentary image *of dasavatara* Vishnu around the Siva temple at Makla.

39. MEDIEVAL SCULPTURES, UJJAIN, DISTRICT UJJAIN.— B.L. Nagarch of the Survey identified sculptures of Surya with his attendants and twelve forms, Vaikuntha Vishnu, Revanta, Parvati performing penance, a standing *saptamatrika* panel, three-headed Mahesamurti and Bhairava in the Vikramkirttimandira, Ujjain. All of them are assignable to eleventh century AD. A beautiful torso of a *sura-sundari* was also identified in the Digambara Jaina Museum, Ujjain.

40. FLAT-ROOFED TEMPLE, KABULPUR, DISTRICT VIDISHA.— P.K. Mukherjee of the Bhopal Circle of the Survey discovered a flat roofed temple with a portico having decorated pillars.

41. BRAHMANICAL SCULPTURES, DISTRICT WEST NIMAR.— During the clearance of a site at a village in Maheshwar tehsil, a few Brahmanical images were found by the Department of Archaeology and Museums, Madhya Pradesh.

MAHARASHTRA

42. LOOSE SCULPTURES, ELLORA, DISTRICT AURANGABAD.— C.L. Suri and B.R. Mani with the assistance of Ajit Kumar and M. Mahadevaiah of the Aurangabad Circle of the Survey noticed sculptures of Brahma, Vishnu, Siva and Ganesa at ancient mounds near Ellora village. Some more images of Vishnu, a female goddess with broken hands, a warrior, animal figures, Ganesa, *nandi,* Siva with four hands and *kichaka* figures were also noticed.

43. MICROLITHS, HARSUL, DISTRICT AURANGABAD.— B.R. Mani of the Aurangabad Circle of the

Survey collected a large number of microliths, comprising of different types of blades, triangles, trapezes, points, borers besides fluted and other cores mainly on chalcedony and chert.

44. MEDIEVAL TEMPLES, HATI, DISTRICT AURANGABAD.— M. Mahadevaiah of the Aurangabad Circle of the Survey noticed a temple at Hati, datable to eighteenth century. The temple is profusely decorated with images in stucco. The *sikhara* portion is beautified with the mythological painted figures of Rama, Sita, Arjuna and others with their names painted below them.

45. PALAEOLITHS, SCULPTURES AND TEMPLE REMAINS, LASUR, DISTRICT AURANGABAD.— Ajit Kumar of the Aurangabad Circle of the Survey collected Middle Palaeolithic tools, including borers, notched scrapers, end-scrapers, parallel-sided blades, mostly on chert and some on chalcedony from the banks of the river Shivana.

Loose sculptures of Uma-Mahesvara, Lakshmi-Narayana, female musician, Ganesa, Rama-Sita-Lakshmana and bust of Vishnu, datable to twelfth-thirteenth century AD were found scattered in the village.

Temple ruins, exquisitely carved pillars, one with *dasavatara* scene depicted oh its shaft and *kichaka* capitals were found. In the village, a beautiful stepped well roughly in shape of *yonipitha* and two *chhatris* of later period were also noticed. Medieval pottery was picked up from the mound.

46. EARLY HISTORICAL SITE, TEMPLE AND SCULPTURES, PAL, DISTRICT AURANGABAD.— Ajit Kumar of the Aurangabad Circle of the Survey discovered an early historical site and collected burnished red slipped ware, red coarse ware, micaceous red ware, burnished grey ware, red polished ware, shell bangle pieces, cut shells, columella, shell beads, terracotta ear pendants, ear reels, beads, toy vessels, hubbed toy cart-wheels, broken sculptures of slate and plaque of red sandstone, skin rubber, pestle and legged saddle quern. A Hemadpanti temple, datable to about twelfth-thirteenth century in ruined condition and sculptures of Mahishasuramardini, Ganesa and *kichaka* figures were also noticed.

47. TEMPLE, PHULAMBRI, DISTRICT AURANGABAD.— M.Mahadeviah of the Aurangabad Circle of the Survey located the remains of a temple, datable to about twelfth-thirteenth century. Loose sculptures of headless Garuda, flying female, Vishnu, Ganesa and female attendants were also noticed which are one of the best specimens of the Yadava period.

48. LOOSE SCULPTURES, DISTRICT JALNA.— B.R. Mani of the Aurangabad Circle of the Survey noticed late medieval sculptures of Ganesa, *nandi* and *Siva-linga* after being exposed from the debris of a modern construction in the city.

49. ROCK-CUT CAVES, DEVGHAR, DISTRICT PUNE.— B.R. Mani of the Aurangabad Circle of the Survey located two unfinished rock-cut caves at Devghar in the vicinity of Karle, one of them being a large hall with two pillars and two pilasters in its front.

RAJASTHAN

50. MEDIEVAL SCULPTURES, LODORVA, DISTRICT JAISALMER.— P.K. Trivedi of the Jaipur Circle of the Survey noticed thirteen sculptures recovered from the foundation trenches of Jaina *dharmasala.* The images worked on yellow sandstone date from *circa* eleventh century and include Agni, three-headed Kaumari, a lady in toilet, *apsaras,* a male *chauri*-bearer, Vishnu, Ardhnarisvara and an erotic scene. At present the sculptures are housed in the State Museum Jaisalmer, Jaisalmer.

TAMIL NADU

51. PAINTED BRICKS AND BRONZES, MELPADI, DISTRICT NORTH ARCOT.— The Madras Circle of the Survey while carrying out the conservation works to the *mahamandapa* located on the eastern side of the Somanatha temple, encountered painted bricks, altogether seven in number, from the debris. The bricks are all broken and the available sizes are 24 X 12 X 5cm and 12 X 16 X 5cm. The bricks were initially plastered over which paintings are noticed. The pigments used are yellow, green, red and black. The designs represent geometrical and linear patterns. On stylistic ground, the paintings can be assigned to the Chola period, as they resemble the paintings now available over the *sikhara* of the temple.

In addition to the above, three bronze images, two of them depicting Siva as Chan-drasekharamurti and the other one Karaikkal Ammaiyar were also recovered during the course of dismantling and reconstruction of the pillars of the *mahamandapa.* The images of Chan-drasekhara are standing in *samabhanga* and hold the usual attribute of Siva in their hands. On stylistic grounds, the small Chandrasekhara image is datable to the tenth century AD while the remaining two, that of bigger Chandrasekhara and Karaikkal Ammaiyar, are ascribed to the late medieval period.

52. URN BURIALS, PERIYAKOTTAI, DISTRICT RAMANATHAPURAM.— D. Dayalan of the Madras Circle of the Survey noticed a megalithic urn burial site situated on the .eastern side of Tekkur. Majority of the burials were found to be disturbed as the area is under cultivation. The surface collection includes the typical megalithic black ware, red ware, black and red ware, bone pieces, pieces of iron slag and fragmentary implements. Interestingly, a neolithic axe and a few pieces of celts were collected from the east of the village on the banks of a small rivulet Upparu'. The tools are made of dolerite and belong to a late Neolithic stage.

53. MEGALITHIC SITE, BODHAMALAI, DISTRICT SALEM.— D.Dayalan of the Madras Circle of the Survey undertook intensive exploration of the small hamlet and noticed burials located to the north-east of Melur. There are as many as thirty five dolmens spread over an area of ten acres, and built on the rock surface. The orthostats are arranged in *swastika* pattern and are oriented in north-west and south-east directions.

54. COINS, AIRAVATESVARA TEMPLE, DARASURAM, DISTRICT THANJAVUR.— A hoard of two hundred

and seventy copper coins of the Chola period were encountered by the Madras Circle of the Survey, while carrying out the major conservation works to the cloistered *mandapa* of Aira-vatesvara temple. The majority of the coins depict the popular 'Ceylon man type' with Nagari legend *'Sri Rajaraja'.*

UTTAR PRADESH

55. STONE SCULPTURES, BARAGARH, DISTRICT BANDA.— R. Pathak of the Lucknow Circle of the Survey noticed stone sculptures assignable to *circa* eleventh century AD. Noteworthy among them are eight-armed Ganesa, Parvati, Vishnu and Uma-Mahesvara.

56. STONE SCULPTURE, LAURI, DISTRICT BANDA.— Indu Prakash of the Lucknow Circle of the Survey, noticed a beautiful sandstone sculpture of early medieval period, kept in the house of Chandra Shekhar Shukla.

57. MEDIEVAL FORT AND ROCK-CUT SCULPTURES, LAURI, DISTRICT BANDA.— Indu Prakash of the Lucknow Circle of the Survey, explored a medieval fort, a monolithic multifaced pillar, rock-cut sculptures of Mahishasuramardini, Ganesa and various other images dating back to early medieval period, on the hills near the village Lauri/Lokhari.

58. ANCIENT MOUND, MOHAMMADABAD, DISTRICT FARRUKHABAD.— L.M. Wahal of the Agra Circle of the Survey noticed an ancient mound near the village. Painted Grey ware, red ware, black-slipped ware, red ware of Sunga-Kushana period and glazed ware of medieval pottery were encountered on the mound.

59. MEDIEVAL SCULPTURES, PANCHARAN NATH, DISTRICT GONDA.— L.M. Wahal of the Lucknow Circle of the Survey, noticed a number of stone sculptures of medieval period. Noteworthy among them are those of Vishnu, Siva-Parvati and *navagraha* panel.

60. ANCIENT MOUND, BABBARKHERA, DISTRICT HARDOI.— L.M. Wahal of the Lucknow Circle of the Survey, noticed an ancient site near the village. The site yielded red ware of Sunga-Kushana period and Mughal glazed ware including associated wares.

61. MEDIEVAL SCULPTURES, HIRAPUR, DISTRICT JALAUN.— L.M. Wahal of the Lucknow Circle of the Survey, discovered a number of sculptures of medieval period representing Uma-Maheshvara, Ganesa, Vishnu, Devi including fragments of door-jamb and lintel.

62. MEDIEVAL FORT AND BRICK TEMPLE, TODI FATEHPUR, DISTRICT JHANSI.— Indu Prakash of the Lucknow Circle of the Survey, explored a late medieval fort and double-storeyed brick temple of eighteenth-nineteenth century AD at Todi Fatehpur. The temple has beautifully decorated walls and ceilings with moulded plasterwork and paintings exhibiting various scenes from the *Ramayana* and the *Mahabharat.*

63. CANNONS, TODI FATEHPUR, DISTRICT JHANSI.— L.M. Wahal of the Lucknow Circle of the Survey noticed various types of cannons of the Mughal period in the fort.

64. ANCIENT MOUND, RAMSARI, DISTRICT KANPUR.— L.M. Wahal of the Lucknow Circle of the Survey, noticed an ancient mound in the vicinity of the village. Pottery of Sunga-Kushana and medieval period were collected from the mound.

65. MEDIEVAL NAGARI INSCRIPTIONS, BILHAUR, DISTRICT KANPUR.— L.M. Wahal of the Lucknow Circle of the Survey discovered an inscription in Devanagari character engraved on pillar of a pavillion.

66. MEDIEVAL SCULPTURES, MANPUR, DISTRICT KANPUR.— L.M. Wahal of the Lucknow Circle of the Survey noticed a number of stone sculptures of medieval period representing Vishnu, Siva, Parvati, Mahisasuramardini, *navagrahas, Saptamatrikas, nandi* including fragmentary door-jamb and lintel.

67. MEDIEVAL SCULPTURES, ANTA, DISTRICT LUCKNOW.— L.M. Wahal of the Lucknow Circle of the Survey, noticed a number of stone sculptures of Jaina pantheon representing Parsvanatha, Ambika including architectural members like lintel and door-jamb.

68. KUSHANA SCULPTURES, PALIKHEDA, DISTRICT MATHURA.— In the vicinity of the village, L.M. Wahal of the Agra Circle of the Survey discovered fragments of stone railing pillars of Kushana period including a short Sanskrit inscription in the Kushana-Brahmi Script.

69. URDU AND NAGARI INSCRIPTIONS, NAVALGANI, DISTRICT UNNAO.— R. Pathak of the Lucknow Circle of the Survey discovered inscriptions in Urdu and Devanagri characters of the eighteenth century engraved on a marble plaque and temple respectively. He also noticed fourteen temples belonging to eighteenth century at the same site.

WEST BENGAL

70. MICROLITHS, DAKSHAN MANGRA, DISTRICT BANKURA.— Shankarnath, A.K. Sharma and D.J. Das of the Calcutta Circle of the Survey found microlithic tools on quartz abundantly in the raised laterite bed to the east of the village. However, on the undisturbed laterite surface no tool was found whereas the microliths available from the dug-up heaps point to the fact that the tool bearing horizon was later on covered with fresh deposit of laterite. The tools mostly comprise blades, serrated scrapers, points and few burins.

71. MICROLITHS, TALDANGRA, DISTRICT BANKURA.— Shankarnath, A.K. Sharma and D.J. Das of the Calcutta Circle of the Survey observed three distinct terraces to the east of the village on the eastern bank of the nullah, which joins the river Silai. On the laterite bed, T-2 is the implementiferous terrace from which a large number of microliths mostly on quartz and

quartzite were found. The tools mostly comprise of points, scrapers, side scrapers, lunates, etc. The valuable find is a side scraper on greenish chert and a burin on quartzite.

72. SCULPTURES AND OTHER REMAINS, TUMKORA, DISTRICT BANKURA.— Shankarnath, A.K Sharma and D. J. Das of the Calcutta Circle of the Survey discovered sandstone images in this village. Of these one is complete and two others are broken. The complete one is that of Vishnu. A microlithic site was also located to the west of the same village on the right bank of the river Silai. The finds mostly consist of points, scrapers and borers. A very rough variety of red ware was also discovered along with the microliths.

V. RADIOCARBON DATES

Radiocarbon dates measured[1] from archaeological and Quaternary samples[2] are presented in the following pages. The dates were determined at the Physical Research Laboratory, Ahmedabad. All the dates are based on 5730 ± 40 years, half-life value of radiocarbon are uncorrected for 14C/12C variations. The year 1950 is the base year to convert these dates into BC/AD scale.

ASSAM

1. JIRA, DISTRICT GOALPARA

PRL-925. Recent to Holocene; charcoal from pit section; depth 3.0m, Sample no. GSI/LB/9/82.	600 ± 120 (AD 1350)

2. BANDAPARA, DISTRICT KAMRUP

PRL-921. Sub-recent to Late Holocene; wood fragments from pit section; depth 1.0m, Sample no. GSI/LB/7/82.	3620 ± 100 (1670 BC)

GUJARAT

3. ROJDI, DISTRICT RAJKOT

PRL-1081. Post-Urban Harappan; charcoal from trench 78J, depth 46-52cm. Sample no. 5241	2430 ± 220 (480 BC)
PRL-1083. Post-Urban Harappan; charcoal from trench 76L; depth 150-160cm. Sample no. 2248.	3990 ± 130 (2040 BC)

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[1]Contributed by D.P. Agrawal, Sheela Kusumgar and Navin Juyal of Physical Research Laboratory. Further details can be obtained from the excavators.

[2]Samples submitted by: 1,2,5 Quaternary Geology Division, Geological Survey of India, Shillong; 7 National Institute of Oceanography, Dona Paula, Goa; 3 Department of Archaeology, Ahmedabad/University of Pennsylvania, U.S.A.; 4 Institute of Rock Art, Bharat Kala Bhavan, Ujjain; 6 Department of A.I.H.C. & Archaeology, Punjab University, Chandigarh; 8 Research Centre for Nepal and Asian Studies, Tribhuvan University, Kath-mandu; and 9 Archaeology Department, Colombo, Sri Lanka.

PRL-1084. Post-Urban Harappan; charcoal from trench 76L; depth 86cm. Sample no. 2218.	3810 ± 150 (1860 BC)
PRL-1085. Post-Urban Harappan; charcoal from trench 45K; depth 280-288cm. Sample no. 10184.	4140 ± 110 (2190 BC)
PRL-1088. Post-Urban Harappan; charcoal from trench 45K; depth 190-220cm. Sample no. 10126.	3880 ± 130 (1930 BC)
PRL-1089. Post-Urban Phase; charcoal from trench 45K; depth 236-243cm. Sample no. 10161.	3980 ± 120 (2030 BC)

MADHYA PRADESH

4. RAMGADA, DISTRICT MANDSAUR

PRL-1196. Upper Palaeolithic industry; ostrich egg shell from yellow silt deposit with kankar; depth 28cm. Sample no. Nil.	>31,000

MEGHALAYA

5. UNIEW RIVER, DISTRICT EAST KHASI HILLS

PRL-923. Holocene; wood fragments from auger hole drilling embedded in sandy sediments. Sample no. GSI/LB/10/82.	750 ± 120 (AD 1200)

PUNJAB

6. SINGH BHAGWANPUR, DISTRICT RUPNAGAR

PRL-778. Early Historical NBP; Charcoal from trench 30T; pit 6 sealed by layer 6; locus XVII-XVIII; depth 272cm. Sample no. SBP-30-T-96.	3100 ± 90 (1150 BC)

PRL-780. Early Historical NBP; charcoal from trench 30T; pit 4 sealed by layer 6; locus XI-XII; depth 220cm. Sample no. SBP-3-T-111.	3710 ± 100 (1760 BC)
PRL-782. Historical; Charcoal from trench 30R; pit 4 sealed by layer 5; locus V-X; depth 210cm. Sample no. SBP-30-R-113.	1460 ±110 (AD 490)
PRL-783. Historical; Charcoal from trench 30R; pit 4 sealed by layer 5; locus DC-10; depth 190cm. Sample no. SBP-30-R-112.	1800 ±110 (AD 150)
PRL-784. Historical; Charcoal from trench 30R; pit 4 sealed by layer 5; locus VIII-EX; depth 232cm. Sample no. SBP-30-R-110.	1780 ± 120 (AD 170)

TAMIL NADU

7. TUTICORIN HARBOUR, DISTRICT TIRUNELVELI

PRL-977. Quaternary; limestone from dredged material from water depth of about 15m. Sample no. TDS1 (white).	$29390 \, {}^{+1360}_{-1170}$
PRL-978. Quaternary; shelly limestone from dredged material from water depth of about 15 m. Sample no. TDS2 (brown).	$26540 \, {}^{+1800}_{-1480}$

SAMPLES FROM ABROAD

NEPAL

8. DUMAKHAD, DISTRICT KATHMANDU

PRL-1073. Historical; charred rice from Trench A; layer 1; depth 32cm. Sample no. Nil.	610 ± 90 (AD 1340)
PRL-1074. Historical; Charcoal mixed with soil from Trench F; layer 3; depth 180cm. Sample no. Nil.	1390 ± 90 (AD 560)

SRI LANKA

9. BELI-LENA, KITULGALA, DISTRICT KEGALLE

PRL-1019. Geometric microlithic level; charcoal from trench 13 i; layer IVb3; depth 68-90cm. Sample no. 9.	8910 ± 210 (6960 BC)

VI. PALAEOBOTANICAL AND POLLEN ANALYTICAL INVESTIGATIONS[1]

The present report incorporates the work done at Birbal Sahni Institute of Palaeobotany, Lucknow.

Some new reports on ancient agricultural economy from Narhan and Khairadih, both ancient sites on the bank of the Ghagra in Districts Gorakhpur and Ballia respectively, have been made. In addition, the remains of some medicinal plants recovered from both the sites, have brought into focus the rational herbal drugs used by ancient settlers in the Ghagra Valley. In the present state of our knowledge, the archaeobotanical evidences to trace back the medical history in pre- and proto-historic India, have been regrettably meagre. Therefore, the archaeological perspective of the ancient remains of herbal drugs, is quite important.

PUNJAB

1. ROHIRA, DISTRICT SANGRUR.— The charcoal samples from different cultural horizons in the mature-Harappan period *(circa* 2,000-1,700 BC) have been studied and tentatively identified. Some of them have been identified as belonging to *Acacia* sp., *Tamarix* sp., *Dalbergia* sp., *Cedrela toona, Shorea robusta, Tectona grandis, Ziziphus* sp., *Lawsonia* sp., and *Vitis vinifera.*

UTTAR PRADESH

2. KHAIRADIH, DISTRICT BALLIA.— The investigation on the remains of carbonized seeds and fruits from Khairadih, Period II *(circa* 700-200BC), reveals the rich and varied agricultural economy at this site. The finds comprise the food grains of rice *(Oryza sativa),* barley *(Hordeum vulgare),* wheat *(Triticum < sphaerococcum* and *T. aestivum),* green-gram or *mung (Vigna radiata),* gram or chick-pea *(Cicer arietinum),* pea *(Pisum sativum)* and *khesari (Lathyrus sativus).*

3. AHICHCHHATRA, DISTRICT BAREILLY.— The identification of charcoal in sample with TF No. 297 as *Anogeissus* and *Shorea,* already reported *(1984-85,* p.161), have been confirmed and some more samples have also been investigated and identified as follows:

TF No. 307 : *Albizia* sp.
TF No. 314 : *Terminalia* sp.; *Shorea* sp.; *Dalbergia* sp. TF
No. 315 : *Terminalia* sp.; *Shorea* sp.

All of these timbers are localy available and were exploited by the ancient settlers from the surrounding forests.

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[1]Contributed by K.S. Saraswat, D.C. Saini, N.K. Sharma and Chanchala.

4. NARHAN, DISTRICT GORAKHPUR.— Identification of seeds, fruits, fibres and some grass cuticles from Mound-2 at Narhan (Chandihar), located in the north-east of the present village, was reported earlier *(1984-85,* pp. 162-63). These finds belonged to Period III and IV dating back from *circa* 700BC to third-fourth century AD. During further excavations from April to June, 1986, on the Mound-1, situated on the western side of the village, the history of rich and varied agricultural economy has been traced back from the earliest habitational deposits dating back from *circa* 1300 BC onwards. The finds of the carbonized seeds and fruits presented here from Mound-1, have been referred to by the excavator as belong to Period I and II *(circa* 1300-700 BC). The details are as under:-

A. Period I *(circa* 1300-900BC): The carbonized food grains belong to rice *(Oryza sativa),* barley *(Hordeum vulgare),* three forms of wheat viz., dwarf wheat *(Triticum sphaerococcum),* bread wheat *(T. aestivum)* and club wheat *(T. compactum),* pea *(Pisum sativum),* green-gram *(Vigna radiata),* gram or chick-pea *(Cicer arietinum)* and *khesari (Lathyrus sativus).* Weed seeds occurring in wheat and barley crops, include the smaller seeds of *Lathyrus sativus, L. sphaca* and *Vicia sativa.* Seeds of mustard *(Brassica campestris)* and flax or *alsi (Linum usitatissimum)* are suggestive of oil seed crops. Jack-fruit or *katahal (Artocarpus integrifolious)* seeds have also been encountered (pls. XXXV-XXXVI).

   The most interesting find from this period is an impression of a fishing hook with a part of thread, on a mud clod. Presence of iron-rust indicates that the hook was made of iron. A minute fragment of fibre recovered from the surface of thread impression has been identified as of ramie *(Boehmeria nivea).* Ramie, being non-elastic and most resistant against the effect of water, is a quality fibre for fishing thread. It becomes apparent that ancient settlers subsisted on fish to supplement their protein requirement.

B. Period II *(circa* 900-700 BC): Among the carbonized grains of rice, barley, pea and green-gram which are of the same kind as from Period I, the finds of safflower seed *(Carthamus tinctorious)* is an interesting discovery.

5. MEDICINAL PLANTS, KHAIRADIH, DISTRICT BALLIA AND NARHAN, DISTRICT GORAKHPUR.— The remains of some medicinal plants recovered through archaeological excavations from Narhan and Khairadih, have thrown fresh light on the knowledge of herbal drugs used by ancient settlers in the Ghagra Valley of eastern U.P. during the N.B.P. period (c. 700-200 BC). *Emblic myrobalan* or *anwala (Phyllanthus emblica* Linn.) and sandalwood *(Santalum album* L.) have been found at Narhan. The Khairadih finds comprise the remains of *chebulic*-myrobalan *(Terminalia chebula* Retz.), *anwala (Phyllanthus emblica* Linn.) and *chiraunji (Buchnania Ianzan* spreng), kernal of nutmeg or *jaiphal (Myristica fragrans* Houtt.) and the wood charcoal of *bel (Aegle marmelos* Correa.). The details of their archaeological provenance are as under.

REMAINS OF MEDICINAL PLANTS FROM NARHAN AND KHAIRADIH

A. NARHAN (DISTRICT GORAKHPUR)

Archaeological number of samples	*Cultural period and age*	*Vernacular Name*	*Botanical Name and family*	*Nature of the material*
NRH-2 Trench C-5, Stratum 10, Depth 2.35-3.20 m.	Period III A (N.B.P. Early Phase) 500 BC	Sandal-Wood or *chandan*	*Santalum album* L. Family Santalaceae	Wood charcoal
NRH-2 Trench C-5, Stratum 7, Depth 2.13-2.72 m.	Period III B (N.B.P. Later Phase) 300-200 BC	Emblic-myrobalan or Anwala	*Emblica officinlis* Gaertn. (Syn. *Phyllanthus emblica* L.) Family Euphorbiaceae	Uncarbonised Fruit and Seed remains

B. KHAIRADIH (DISTRICT BALLIA)

KDH Trench E-2, Stratum 4, Depth 5.65 m.	Period. II (N.B.P. Early Phase) 700-450 BC	Nutmeg Kernel or Jaiphal	*Myristica fragrans* Houtt. Family Myristicaceae	Carbonised Kernel
KDH Trench A-l, Stratum 4, Depth 4.42 m.	-do-	Emblic-myrobalan or Anwala	*Emblica-offtcinalis* Gaertn. *(Syn.Phyllanthus emblica* L.) Family Euphorbiaceae	Carbonised fruit piece

Archaeological number of samples	*Cultural period and age*	*Vernacular Name*	*Botanical Name and family*	*Nature of the the material*
KDH Trench E-2, Stratum 2, Depth 3.33 m.	Period II (N.B.P. Later Phase) 450-200 BC	Chebulic-myrobalan or Haritaki	*Terminalia chebula* Retz. Family combr-etaceae	Carbonised fruits
KDH Trench KDH-3/F6, Stratum 2-3, Depth 2.50-2.60 m.	-do-	Currant or Sweet Raisin, Draksha	*Vitis vinifera L.* Family Vitaceae	A Broken Seed
KDH Trench KDH-3/F6, Stratum 2, Depth 2.50 m.	-do-	Chiraunji	*Buchnania lanzan* Spreng Family Anacardiacae	Broken Fruit Shells

The literary legends pertaining to the history of medicine, hardly have any archaeological value. Considering the nature of evidences now available, the ancient remains of herbal drugs may, thus, make the archaeological and historical reconstruction more meaningful, particularly if we wish to ascertain their relevance within the Vedic system of medicine.

VII. MUSEUMS

1. TRIPURA GOVERNMENT MUSEUM, AGARTALA.— During the year under review, one silver *hasuli, rigni, ria* and *pagri* were added into the museum collection.

2. ARCHAEOLOGICAL MUSEUM, TAJ, AGRA.— In order to provide adequate light and air, tube light bulbs and air-circulator were provided in the galleries.

3. GOVERNMENT MUSEUM, AHAR.— Display arrangements were improved by providing better show-cases.

4. GOVERNMENT MUSEUM, AJMER.— All the galleries were repainted. The show cases and pedestals were repolished. Lighting arrangements were considerably improved. Besides, labels were also provided to each and every object on display.

5. GOVERNMENT MUSEUM, ALWAR.— Apart from general maintenance, new pedestals, show cases, maps and charts were added to the museum. An exhibition on 'Ragamala Paintings' was also arranged.

6. GOVERNMENT MUSEUM, AMBER.— Show-cases of the museum were repaired. New equip ments were also purchased for the Museum.

7. ARCHAEOLOGICAL MUSEUM, BADAMI.— The museum acquired four antiquities. Among them mention may be made of two *adhishthana* fragments depicting *chaitya* motifs.

8. GOVERNMENT MUSEUM, BHARATPUR.— Proper electric arrangements in the show-cases and galleries were made from time to time. The preservation of objects on display was taken up. Chemical treatment was given to some important exhibits in order to save them from decay.

9. ORISSA STATE MUSEUM, BHUBANESWAR.— Two numbers of stone sculptures (hero-stones) have been acquired from Tipuri village near Kanas in District Puri for the State Museum during research tour of the Superintendent of Museum. One stone panel containing figures of Jaina *tirthankaras* found from Ghatikia near Bhubaneswar has been acquired for the Museum.

10. GOVERNMENT MUSEUM, BIKANER.— The set up of the museum was reshuffled on modern lines. The pedestal and wall show cases were repainted. Elaborate write up and labels were also added.

11. PRINCE OP WALES MUSEUM, BOMBAY.— Show-cases, pedestals and the walls were repainted in the Bronze Gallery. Some of the exhibits in the gallery were replaced with others from

reserve collection. Exhibition Bharatiya Rangamancha- a cultural tradition of Indian stage, dance, drama and music based on the collection of K.T. Deshmukh, in collaboration with Burjor Patel Productions, Bombay, was arranged in the Coomaraswamy Hall.

12. INDIAN MUSEUM, CALCUTTA.— The Archaeology Section of the Indian Museum was enriched by the acquisition of stone sculptures, bronzes, terracotta objects, coins in various metals, seal and manuscripts.

The Bronze Gallery has been reorganized with particular stress on exhibition of masterpieces of Indian bronzes avoiding a crowded display of miscellaneous antiquities. The showcases have been repainted. Steps have been taken to modernize the long sculpture galleries of the section introducing mosaic floor in the Gandhara Gallery and repainting of other bays with suitable background.

13. HARYANA STATE MUSEUM, CHANDIGARH.— The display and lighting arrangements of the museum was reorganised.

14. ARCHAEOLOGICAL MUSEUM, CHANDRAGIRI.— Re-organization work of the Museum was taken up.

15. GOVERNMENT MUSEUM, CHITTAURGARH.— Emergency light plant was provided to the museum in order to cope with power failure.

16. ARCHAEOLOGICAL MUSEUM, MATTANCHERRY PALACE, COCHIN.— The Museum was thrown open to the public after thorough re-organisation.

17. CHANDRADHARI MUSEUM, DARBHANGA.— To tighten the security arrangements, the entire verandah and other space of the museum was provided with iron grills. The work is in progress. Project on scientific documentation and cataloguing of museum objects was taken up. A terracotta piece has been acquired.

18. ARCHAEOLOGICAL MUSEUM, RED FORT, DELHI.— To facilitate the visitors, exhaust fans and air-circulators were provided in all the galleries and arched openings and main doors have been provided with light shaded cotton curtains.

19. INDIAN WAR MEMORIAL MUSEUM, RED FORT, DELHI.— The highlights of the display in the newly created showcases of Gallery 5 and 6 include survey and communication instruments, models of boat, cart and goods train, flags, uniforms, badges, medals, etc. coir matting was also provided in all the galleries of the museum and electrification work has been rectified and modernized. With the completion of these two galleries, the museum is completely reorgani sed except for the labelling which is in progress.

20. GOVERNMENT MUSEUM, DUNGARPUR.— New pedestals and show cases were added to the museum.

21. ARCHAEOLOGICAL MUSEUM, GULBARGA.— An excellant panel of Buddhapada in limestone datable to second century AD from the well-known Buddhist site, Sannati in Chitapur taluk, District Gulbarga, was added to the museum.

22. ARCHAEOLOGICAL MUSEUM, GWALIOR.— The Museum acquired thirteen hundred and seventy stone sculptures of Vishnu, Surya, Uma-Mahesvara, Indra, *dikpalas, nayikas, navagraha* panels, Tirthankaras, etc., mostly belonging to tenth-eleventh century AD.

23. ARCHAEOLOGICAL MUSEUM, HALEBIDU.— The museum collection has been enriched by acquisition of a mutilated four-armed Saiva *dvarapala,* a doorjamb lintel with Gaja-Lakshmi in the centre and a part of ceiling with dancer and musicians. Two inscriptions were collected in the environs of Halebid; both are in Kannada inscribed on three sides of the stone, with Jaina ascetics worshipping Mahavira and a *Jaina-pitha.*

24. ARCHAEOLOGICAL MUSEUM, HAMPI.— The museum acquired five sculptures assignable on stylistic grounds to the Vijayanagara period. Portion of a drum slab (limestone) depicting scenes from the Buddhist mythology datable to second-third century AD is a noteworthy sculpture amongst the new additions. Besides reorganizing one of the existing galleries, several broken sculptures were mended and the store containing reserve collections were also reorganized.

The museum organized an exhibition A Decade of Archaeological Research at Hampi: an exhibition of excavation finds. The exhibition comprised original antiquities in metal, lithic, stucco and terracotta media, pottery and innumerable photographs showing different views of the excavation work jointly undertaken by the Hampi National Project of the Survey and the Directorate of Archaeology and Museums, Karnataka. Under the new network of educational mass contact programmes, the museum organised documentary film shows regularly.

25. GOVERNMENT MUSEUM, JAIPUR.— Emergency light plant was provided to the museum in order to cope with power failure.

26. GOVERNMENT MUSEUM, HAWA MAHAL, JAIPUR.— Forty-nine new objects were acquired out of which three old coins, twenty-eight beads, a bronze *yantra* of V.S. 1515, a mini brass cannon and an octagonal *yantra* inscribed in Persian are among important acquisitions.

27. GOVERNMENT MUSEUM, JAISALMER.— Photo frames, show-cases and pedestals were pro vided to the museum and display was considerably improved.

28. GOVERNMENT MUSEUM, JHALAWAR.— Lighting arrangement in the museum was made. New pedestals were also prepared.

29. GOVERNMENT MUSEUM, JODHPUR.— The painting section of the museum was improved by addition of new celluloid sheets to large-size paintings. The show-cases and pedestals were repolished.

30. ARCHAEOLOGICAL MUSEUM, KALIBANGAN.— One hundred and thirty explored antiquities and few photographs of pre-Harappan and Harappan period have been selected for display in Gallery 3. A few plaster casts of copper objects have also been prepared for display. Besides, the museum acquired a tongue-shaped terracotta object engraved with a *pipal* leaf and Harappan script. Show-cases for display work of explored antiquities have been prepared.

31. ARCHAEOLOGICAL MUSEUM, KHAJURAHO.— To highlight the displayed objects in the galler ies, sufficient number of mercury vapour lamps and fluorescent tubes were fitted. To strengthen the security measures in the Jardine Museum the old iron collapsible shutter at entrance was replaced by new ones and provided with mercury lamp in exterior of the building.

The Museum collection was enriched by purchasing one Islamic copper coin. One beautiful figure of an *apsara* with flute players was replaced by another *apsara* figure in the miscellaneous gallery. Old general label and notice boards were replaced by new ones. Large number of antiquities were added to the museum which were handed over by the Bhopal Circle after conducting excavation at Khajuraho.

32. ARCHAEOLOGICAL MUSEUM, KONARAK.— The old photographs displayed in the corridors have been replaced by laminated photographs of Sun temple and Sun god from different parts of India. One *mithuna* (amorous couple) sculpture from reserve collection, has been displayed in Gallery 2. Repairing of the galleries and replacement of damaged laminated sheets and glass panes was completed. Old gates and side grills at the entrance have been removed and new grills and gates with designs copied from Konarak temple were installed.

33. GOVERNMENT MUSEUM, KOTA.— Labels were prepared for all the exhibits.

34. ARCHAEOLOGICAL MUSEUM, LOTHAL.— The wall showcases and an island case were pre pared for Gallery 4 and display work is in progress. The museum enriched its collection by acquiring one terracotta animal figurine.

35. STATE MUSEUM, LUCKNOW.— During the year, a human head, a bust of Vishnu, an image of Chamunda and terracotta figurines were added in the collection. A temporary exhibition of colour prints of miniature paintings was organised in the State Lalit Kala Akademi hall.

36. FORT MUSEUM, ST GEORGE FORT, MADRAS.— During the year under review, two galleries of Portrait and the Indo-French were given a colour wash.

37. GOVERNMENT MUSEUM, MANDOR.— All the galleries were repainted. The show cases and pedestals were repolished.

38. GOVERNMENT MUSEUM, MOUNT ABU.— Adequate lighting arrangements were made for the convenience of the visitors. The campus was improved. Extension Plan of the building was also chalked out.

39. HAZARDUARI PALACE MUSEUM, MURSHIDABAD.— The Museums Branch of the Survey took over the charge of this museum from Government of West Bengal. The antiquities and art objects as handed over to the Survey are all according to an Inventory list of that Museum. It includes silver throne, ivory palanquin, swords and shields, costumes and jewellery, symbols and charters, coins and documents, silver laced *shamiana* and the *jhar*-lantern of great grandeur and highest value, paintings and statues, books and manuscripts, religious materials and household objects. Photo-documentation of the entire collection was completed. Materials were purchased for reorganising armoury section and showcases are under preparation. Anti-termite treatment of the entire palace and re-electrification work are in progress.

40. CENTRAL MUSEUM, NAGPUR.— The sculptures in the museum are being provided with independent wooden pedestals. A few sculptures were added in museum collection.

41. NATIONAL MUSEUM, NEW DELHI.— During the year under review, the museum acquired ten bronzes and two stone sculptures. The noteworthy bronzes are Bodhisattva Avalokitesvara, thirteenth-fourteenth century from Lahul-Spiti; Tirthankara, tenth century; Avalokitesvara, ninth century; Tirthankara, eighteenth century, Rajasthan; Yakshi Padmavati, folk, eighteenth century, Rajasthan.

Of the new acquisitions, a small stone sculpture, Vishnu, tenth century from Central India deserves special mention.

Three temporary exhibitions were held at the National Museum during the period under review: 'Masterpieces of Indian Sculptures', 'Kushana Sculptures from Sanghol'- and 'Archaeological Discoveries of the Decade' - in collaboration with the Survey.

42. ARCHAEOLOGICAL MUSEUM, PURANA QILA, NEW DELHI.— Five hundred and eighteen selected antiquities including terracotta human and animal figurines, seals and sealings, coins, copper and iron objects, terracotta and semi precious stone beads and pendants recovered from Mauryan to Mughal levels of Purana Qila excavations were added to the Museum collection. Preliminary plans for the display has also been prepared.

43. GOVERNMENT MUSEUM, PALI.— The sculptures, terracotta figures, inscriptions and other antiquities were collected for the purpose of display in the museum.

44. GOVERNMENT MUSEUM, PATNA.— One copper coin of Shah Alam Badshah was added in the collection of the museum.

45. LOCAL MUSEUM, SARANGAPUR.— The Sarangapur Archaeological Association has made a good collection of sculptures for the local museum from the sites around the District Rajgarh. The collection of the one Siva-Parvati and another Vishnu image are worth noting. Both represent the characteristics of Kalachuri Art.

46. ARCHAEOLOGICAL MUSEUM, SARNATH.— The Varanasi Gallery i.e. Gallery 2 was fully

reorganised by displaying the stone sculptures instead of laminated photograph of classical period. Uneven marble flooring in Gallery 3 was removed and mosaic tile flooring was provided. Necessary action has been taken up for visitors amenities i.e. installation of pump set for potable water etc.

47. HIMACHAL STATE MUSEUM, SHIMLA.— The museum during the year under review acquired through purchase, gift, loan and exploration, thirty-two decorative art objects, nine textiles, three hundred and fifty coins, fourteen drawings, three paintings, weapons and seven manuscripts. Nine illustrated leaves of Devi Mahatamya were loaned to National Museum, New Delhi for display in the Festival of India in USA. All India Annual Art Exhibition 1985 was organised in the museum, besides arranging three on-the-spot painting competitions for school children. Short term course on Takri script was also organised.

48. MARATHA MUSEUM, THANJAVUR.— The museum has taken necessary steps to acquire about one hundred twelve old coins from the Maratha family of Thanjavur, and a skeleton of a shark has been brought to the museum.

49. GOVERNMENT MUSEUM, UDAIPUR.— The display arrangements in the museum were con siderably improved. About twelve hundred coins were also acquired. An exhibition on miniature paintings based on *Sur-Sagar* was arranged.

50. ARCHAEOLOGICAL MUSEUM, VAISHALI.— The Gallery 2 of the Museum was fully organised and antiquities were displayed with provision of six show-cases, one pedestal show-case and a coin show-case.

VIII. ARCHITECTURAL SURVEY

TEMPLE SURVEY, NORTHERN REGION.— The Temple Survey Project (Northern Region) under B.L. Nagarch of the Survey continued the work of architectural survey of the temples of the Paramaras of Malwa.

The Navatorana temple at Khor stands on a spacious platform and consists of a sanctum, an *antarala,* a *sabhamandapa* with three *ardhamandapas,* one each on either side and one in front (pl. XXXVII). It is dedicated to .Siva. The notable features of this temple are the nine *toranas* of its *sabhamandapa.* The other two temples at Khor are also known as Toranaman-dirs, while one of them was dedicated to Siva, the other seems to be dedicated to Sakti.

The Siva temple at Modi^ which was dismantled for transplantation as a measure of salvage archaeology, has not yet been transplanted. Its architectural remains comprising bases, shafts and capitals of pillars and moulding of *adhishthana,* door-jambs, components *of jangha* and *sikhara* are kept near Gandhi Sagar dam, while its sculptures have been shifted to the Archaeological Museum, Bhanpura. The pillars of this temple are ornamented with niches containing sculptures and are richly carved with various decorative designs.

The Nandikesvara_temple at_Navli_js dedicated to Siva. The original temple which was built in *circa* eleventh century AD, fell in ruins and was renovated at a later date. Only its sanctum has survived. The *sikhara* of the sanctum had collapsed and a dome has been constructed in place of it. The sanctum enshrines *a Siva-linga.* Besides, a sculpture of *nandi* and Uma-Mahesvara are also kept inside the sanctum. A beautiful sculpture shows Uma and Mahesvara seated in *lalitasana* on the standing mount bull. The ruins of the temple are kept around it. There is a step-well on the west of the temple, showing sculptures of Surya, Ganesa and Agni on its walls. Besides this, Navli has also yielded ruins of a Siva and a Devi temple, assignable to the Paramara period.

Hinglajgarh has yielded remains of nearly thirty-one temples of Paramara period. Some of these temples consist on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardha-mandapa.* However, the exact plan of a few of these temples can be ascertained only after removing the debris lying around them. At present only the plinths of the temples have survived. The architectural and sculptural members of these temples have been shifted to the open-air museum inside the fort. Some of the sculptures from these temples have been shifted to Bhanpura, Indore and Bhopal Museums for display. Some of these temples are triple-shrined with a common *sabhamandapa* and *ardhamandapa* in front. Many of these temples stood on spacious platforms. One of these temples has a peculiar plan showing a sanctum with a courtyard in front around which are arranged five cells or *devakulikas.* The images of Uma-Mahesvara seated on bull recovered from the site show that the temple was dedicated to Siva. Inside the *devakulikas* are enshrined *Siva-lingas.* The temple was probably used for Tantric worship. The Parvati temple consists on plan of three sanctums, the central sanctum facing east while the side sanctums face north and south. There was common *sabharnandapa* in front of these three sanctums. All these sanctums are lying vacant at present. The site on which

this temple stands is called Parvati after the river of the same name which flows on its east. While some of the temples at Hinglajgarh were Brahmanical others were sacred to Jainas. These temples were crowned by a *nagara sikhara* and their *sabhamandapas* had a *samvarana* roof. A few sculptures of these temples have been fixed in the walls of the fort. The Brahmanical temples at Hinglajgarh were dedicated to Siva, Sakti, Surya and Vishnu.

The Takshakesvara temple at Takhaji or Takshakesvara is dedicated to the worship of the serpent king Takshakesvara. The temple is located on a platform approached by a flight of steps on the east. The sanctum enshrines an image of two-armed Takshakesvara standing in *tribhanga* and holding *kapala* and *bijapuraka.* There is a canopy of seven serpent-hoods above his head. The image is assignable to *circa* eleventh century AD and is in worship. The present temple of Takshakesvara is a renovated one and its sanctum is crowned by a circular dome in Indo-Islamic style. An image of Uma-Mahesvara seated on mount bull and sculptures of a seated *gana* and a standing *vaga* are kept on the platform of the temple.

The Parsvanatha Svetambara temple at Kukdeshwar, District Mandsaur consists on plan of a sanctum, a *gudhamandapa* and *an ardhamandapa.* It stands on a high platform and is in worship. The temple has been renovated and has been whitewashed and its ceilings and lintels have been painted with oil paints. The door-ways of its *gudhamandapa* and sanctum are elaborately carved. The temple is assignable to *circa* thirteenth century AD. The Lakshmi-natha temple at Kukdeshwar is dedicated to Vishnu and is also assignable to *circa* thirteenth century AD.

The Vishnu temple at Dhundheri, District Mandsaur consists on plan of a sanctum, an *antarala* and an open *sabhamandapa*. The sanctum enshrines at present an image of Chaturbhuja or Vishnu carrying *varadaksha, gada, chakra* and *sankha.* Its sanctum-doorway is carved with three *sakhas.* The temple has been renovated and is in worship. The original temple is assignable to *circa* eleventh century AD. The other temple at Dhundheri is dedicated to Siva and is in a dilapidated condition. It consists on plan a sanctum, *antarala* and *sikhara.* Its sanctum-doorway is elaborately carved with three *sakhas.* The pillars of the *sabhamandapa* are highly ornamented with sculptures of *saptamatrikas* and *surasundaris* playing on musical instruments. A Siva-*linga* is at present kept in the *sabhamandapa.* But this temple was also originally dedicated to Vishnu as is evident from the lintel of the sanctum-doorway. It is also assignable to *circa* eleventh century AD. The sculptures of the temple have been shifted to Mandsaur Museum.

The Varaha temple_at Kohala Mandsaur consists on plan of a sanctum, an *antarala an* open *sabhamandapa* and an *ardhamandapa.* It stands on a spacious platform. The sanctum enshrines at present three images of which the central one is that of Varaha uplifting the earth-goddess. The image on the right is that of seated Yoganarayana and on the left is that of seated Varaha. From the image of seated Lakulisa shown on the *lalatabimba* of the lintel of its sanctum-doorway, it is evident that this temple was originally dedicated to Siva. On either side of the *sabhamandapa* of this temple is an underground chamber. The sanctum is *pancharatha* on plan and the *sikhara* above it is clustered by two *urusringas* on each face and three *karnasringas* on each corner. The *sikhara* is crowned by an *amalaka, kalasa* and *bijapuraka.* The temple is a fine specimen of Paramara temple architecture and is assignable to *circa* eleventh century AD.

The temple of Lakshmi-Narayana at Kohla stands on a high and spacious platform and consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* The sanctum enshrines an image of Lakshmi-Narayana. The sanctum-doorway is decorated with three *sakhas.* From the sanctum-doorway showing the sculptures of *Saiva-dvarapalas* in niches on the lower portion of its jambs, it is evident that the temple was also originally dedicated to Siva. The *pancharatha sikhara* above its sanctum is decorated with two *urusringas* on each of its four faces and four *karnasringas* at each of its four corners. The temple has been renovated and white-washed in modern times. It is in worship and the original temple is assignable to *circa* eleventh century AD.

Out of the two Jaina temples known as Sas Bahu ka-mandir a at Kohla, one has been converted into a school. It was dedicated to Mahavira Vardhamana. The other Jaina temple is dedicated to Parsvanatha and is even now in worship. Both of these temples belong to *circa* fourteenth century AD. The Parsvanatha temple consists on plan of three sanctums arranged in a row, a closed *mandapa,* an open *mandapa* and an *ardhamandapa.* The doorways of temples of Vishnu, Siva, Surya and Ganesa assignable to *circa* eleventh century AD have been used in the construction of this temple.

The temple of Chaturbhuja at Kohla has close resemblance in plan to that of Lakshmi-Narayana temple. It consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* The sanctum enshrines at present a modern image of four-armed Vishnu. The temple was constructed in VS 1166 (AD 1109) as is proved from an inscription on the western wall of its *sabhamandapa.* The sanctum-doorway is plain. From an image of two-armed Lakulisa seated in *padmasana* and holding *bijapuraka* and *lakuta* carved on its *lalatabimba,* it is evident that this temple was originally dedicated to Siva.

Onkar Mandhata in District East Nimar was also a prolific centre of the *bhumija* temples of the Paramaras These temples are at present in a dilapidated condition and have lost their original superstructure. The Amaresvara or Mamlesvara temple at Onkar Mandhata is assignable to the latter half of the tenth century AD. However, this temple was later on rebuilt on a plan and design resembling the Udayesvara temple at Udaipur in District Vidisha and is dated AD 1063 on the inscriptional evidence. This temple consists on plan of a *saptaratha* sanctum, an *antarala* and a *sabhamandapa* having three *ardhamandapas,* one each on either side and one in front. The temple is dedicated to Siva and the sanctum enshrines a *Siva-linga.* Its sanctum-doorway is decorated with five *sakhas.* The temple stands on a spacious courtyard enclosed by a modern boundary wall.

The Vriddha Kalesvara temple is located near the Mamlesvara temple in the same courtyard. It consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* However, only the sanctum and *antarala* have survived. This temple is also dedicated to Siva and the sanctum enshrines a *Siva-linga.* Its sanctum-doorway is elaborately carved with seven *sakhas.* From the similarity of the *vedibandha* mouldings of this temple to the *vedibandha* mouldings of the Mamlesvara temple, it is evident that both these temples are contemporary. The sanctum of this temple is also *saptaratha* on plan. The original *sikhara* of the temple, which was in *bhumija* style has been entirely lost and the temple has been renovated by rebuilding its *sikhara* during the Maratha period.

The other important temple at Onkar Mandhata is Onkaresvara. The temple consists on plan of a sanctum, an *antarala,* a *sabhamandapa* with lateral transcepts and an *ardhaman-dapa.* It is dedicated to Onkaresvara Siva. The sanctum enshrines a *Siva-linga* which is a natural formation of the rock on which the temple stands. The sanctum-doorway consists of five *sakhas.* The pillars of its *sabhamandapa* are massive and are richly carved. It is a five-storeyed temple and has a number of modern shrines around it.

The Siddhanatha Mahadeva temple at Mandhata is one of the most important temples of the Paramaras. It stands on a high *jagati* decorated with elephants in various postures in reliefs. These elephants form one of the most important features of this temple. The temple consists on plan of a sanctum having an entrance on all the four sides, a *sabhamandapa* with lateral transcepts and an *ardhamandapa* on all the four sides. Thus this temple is of *sarva-tobhadra* type. Only the sanctum with its four doorways and the pillars of *sabhamandapa* and *ardhamandapa* have survived. The superstructures above the sanctum-doorways and the roofs of the *sabhamandapa* and *ardhamandapa* have collapsed. Each of the sanctum-doorways is decorated with seven *sakhas.* The pillars of the *sabhamandapa* are richly carved with geometrical and floral designs and human figures. The *bhuta* brackets above the pillars show *bhutas* having the heads of human beings, elephants and lions. Lakulisa seated in *padmasana,* is shown on the *lalatabimba* of each of the sanctum doorways. A copper-plate inscription recovered from the site records the reign of the Paramaras when this temple was built. The sanctum enshrines a *Siva-linga.*

Chaubis Avatara temple at Panthya in Onkar Mandhata is located on the northern bank of the Narmada. It has been named after the twenty-four forms of Vishnu to whom it is dedicated. The temple had fallen in ruins and has been preserved by the Survey. The images of Vishnu carved on black stone are kept inside the temple. The original temple consisted on plan of a sanctum, *antarala, sabhamandapa* and *ardhamandapa.* The sanctum and the *antarala* are entirely lost. The *sabhamandapa* has sixteen pillars which are richly carved.

The Gaurisomanatha temple at Onkar Mandhata consists on plan of a sanctum, *antarala, sabhamandapa* and *ardhamandapa.* The *sabhamandapa* and *ardhamandapa* have collapsed and are entirely lost. The sanctum-doorway consists of seven *sakhas.* The sanctum enshrines a gigantic *Siva-linga* of black stone. It is a three-storeyed temple. In elevation the temple shows *jagati, adhisthana, jangha, varandika* and *sikhara.* The sanctum is *saptaratha* on plan. The *jangha* is decorated with a niche containing an image of a deity on each *bhadra.* The temple is a beautiful specimen of *bhumija* style of the Paramaras. A number of miniature *sikharas* which once decorated the quadrants of its *bhumija sikhara* are lying in the courtyard of this temple.

The Parsvanatha temple at Makshi, District Shajapur, consists on plan of a sanctum and a *sabhamandapa.* It is located inside a spacious courtyard surrounded on all sides by small shrines. This was originally constructed during the Paramara period in *circa* thirteenth century AD and has undergone a number of renovations later on. The sanctum enshrines three images, two of which are of Parsvanatha, who is *mulanayaka.* The small shrines around the main temple contain images of Jaina Tirthankaras. However, in one of these shrines is installed a *Siva-linga.*

The Mahakalesvara temple at Sundarsi in District Shajapur consists on plan of a sanctum, *antarala* and *sabhamandapa.*The sanctum enshrines a *Siva-linga* which is in worship. The sanctum-doorway is decorated with seven *sakhas.* From an inscription carved on the southern pillar of the *antarala* and dated VS 1144 (AD 1087), it is evident that this temple was built in the closing part of *circa* eleventh century AD. The sanctum is stellate on plan. In elevation the temple shows *adhisthana* mouldings and *jangha.* The portion above the *jangha* had collapsed and has been renovated. On the *bhadra* of the northern *jangha* facade of the temple is represented eight-armed dancing Siva. On the upper portion of the dancing Siva are carved five niches which contain sculptures of seated Brahma, Vishnu, Ganesa and other deities. Immediately above the head of dancing Siva are carved seven standing *rishis.*

The Varaha and Baijanatha Mahadeva temples at Agar, District Shajapur were also surveyed. The Varaha temple was built out of the material of an ancient Paramara temple of *circa* eleventh century AD which originally stood at the site. The image of Varaha enshrined at present in the sanctum belongs to the original temple. The temple in its present form was probably built during the last century. The temple consists on plan of a sanctum and a *man-dapa.* The image of Varaha has been painted with modern oil paints.

The Baijanatha Mahadeva temple was built by Col. Martin in 1882 out of the material of a Siva temple of Paramara period assignable to *circa* eleventh century AD which originally stood at this site. The temple has been renovated during recent times and has lost its originality. The image of Siva-Parvati in the niche of the eastern wall of its sanctum is made of black stone and is assignable to *circa* eleventh century AD. It belongs to the original Siva temple of the Paramara period. The *Si\a-linga* enshrined in the sanctum is also original.

The Mahakali temple at Karedi, District Shajapur has been constructed out of the ruins of a Siva temple which orginally stood at the site during the Paramara period. This is proved by an inscription dated VS 1055 (AD 998) on the temple. The sculptures of the original Siva temple have been fixed on the walls of the sanctum, *antarala* and the compound during the course of renovation of the temple. The present temple is dedicated to Mahakali and is in worship. The temple consists on plan of a sanctum, an *antarala* and a *sabhamandapa.* The *sabhamandapa* has twenty-four pillars arranged in six horizontal and four vertical rows which support its flat ceiling. Some of these pillars are ancient while others are modern. Six sculptures including those of Lakulisa, Surya, two *Saiva-dvarapalas,* Parvati and Yogasana Vishnu are fixed into the walls of the *sabhamandapa.* Sixteen sculptures including those of Parvati performing penance, seated *devis,* standing *navagrahas,* Narasimha and two seated Jaina Tirthankaras are fixed into the walls of the sanctum. The flat ceiling of the sanctum rests on four pillars and twelve pilasters. The sanctum is surmounted by a *saptaratha sikhara* in the *bhumija* style. Noteworthy among the sculptures fixed in the compound wall of the temple is an image of four-armed Parvati standing in *samapada.* Both of her upper hands are crossed and a *Siva-linga* is placed on the point of crossing. She holds a Siva-*linga* by both of her lower hands and there is a *kuchabandha* around her breasts. The *parikara* is decorated with images of various deities.

The temple at Sakhedi in District Shajapur, is in ruins. The temple is assignable to *circa* tenth century AD on the basis of architectural style. At present there is no sculpture at the

site. After the collapse of the temple, the site was used for the construction of a tomb, the ruins of which are also lying at the site. The platform measures 17.40m long, 19.50m broad and 5.60m high.

The temple at Gondal Mau is in ruins. Among the sculptures still lying on the platform of the temple may be mentioned those of a Naga, Ganesa, *sarpamithuna,* Bhairava and a bearded sage. The door-jambs and bases of pillars are also lying at the site. On the basis of architectural and sculptural styles the temple could be dated to *circa* tenth century AD.

The ruins of Brahmanical and Jaina temples at Jharda.District Ujjain were also surveyed. The Hanuman temple at Jharda stands on the ruins of a Siva temple. The present temple is a renovated one and the renovation work was carried out at the end of eighteenth century AD. The image of Hanuman enshrined in the temple is assignable to *circa* eleventh century AD. The original *yonipatta* and *Siva-linga,* slabs of *jangha* carved pillars are kept at the site.

The ruins of a Paramara temple lying near Madhavasingh-ki-Odi at Jharda were also surveyed. Noteworthy among the ruins are an image of two-armed standing Chandra, an image of a *nandi* seated on the top of a pillar and a slab *of jangha* showing a pilaster and a recess containing an image of an *apsaras.* Some of the architectural and sculptural fragments of this temple have been fixed in the walls of the Odi. Noteworthy among them is a fragment of *kumbha* moulding carved with a median band decorated with diamonds and rosettes and a niche containing an image of a male deity.

The Siva temple at Jharda consists on plan of a sanctum, *antarala* and *sabhamandapa.* The sanctum enshrines a *Siva-linga* installed on a *gauripatta.* The original sanctum of the temple had collapsed long back and has been rebuilt at the end of eighteenth century. In the southern wall *of antarala* are fixed sculptures of Siva-Parvati, Brahma, Siva, Parvati performing penance, Andhakantaka Siva, Nataraja and Uma-Mahesvara. The ceiling of *antarala* rests on two pilasters. The *sabhamandapa* has fourteen pillars and two pilasters which support its ceiling. These pillars and pilasters are arranged in four rows horizontally and vertically. The exterior of the walls of the sanctum is plain. The sanctum is *pancharatha* on plan and is surmounted by a *sikhara* decorated with *urusringas* and *karnasringas.*

The ruins of a Vishnu temple at Jharda_were also surveyed. This temple stood at a place known as Deva Maharaja. These ruins are now kept on a platform and comprise images of Vishnu, Siva-Parvati and Parvati.

The temples of Ganesa and Siva and colossus of Trimurti worshipped locally as Kali or Mata and Makla in_District Ujjain_were also surveyed. All of them are assignable to *circa* eleventh century AD. The Ganesa temple was dedicated to Ganesa. It consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* The sanctum has plain walls but its ceiling is decorated with a full-blown lotus. On the pedestal attached to the rear wall of the sanctum is kept an image of Ganesa. The plain ceiling of *antarala* rests on two pilasters. The ceiling of *sabhamandapa* is divided into three compartments by the arrangement of two pillars and four pilasters. The walls of the *sabhamandapa* are plain. In the southern wall of the *sabhamandapa* is fixed a stone lintel depicting *navagrahas.* The *ardhamandapa* has collapsed. The temple is assignable to *circa* tenth century AD.

The Siva temple ,at_Makla, known as Makalesvara temple consists on plan of a sanctum, an *antarala* and a *sabhamandapa.* The sanctum of the temple is original while its *sabhaman-dapa* has been rebuilt two centuries back. The sanctum enshrines a *Siva-linga.* The plain walls of the sanctum are relieved by three niches of which the western niche contains an image of Parvati practising penance. The top of the ceiling of the sanctum is carved with a lotus from which issues out a pendant. The sanctum doorway is carved with five *sakhas* all of which are plain. Standing Saiva *dvarapalas* are shown below the *sakhas.* The lintel of the sanctum-doorway shows Lakulisa in the centre and Brahma and Vishnu on either end. A slab bearing an inscription of fifteen lines in the Sanskrit language and Devanagari characters is fixed above the lintel of the sanctum-doorway. There is a niche-shrine in the southern and northern walls of the *antarala.* The niche-shrine in the southern wall contains an image of seated Siva-Parvati. The niche-shrine in the northern wall contained an image of seated Ganesa. The ceiling of *antarala* is carved with a full-blown lotus and rests on six pilasters. The northern and southern walls of the *sabhamandapa* are carved each with a niche containing an image of four-armed Mahishamardini Durga. In the western wall of the *sabhamandapa* are carved two niches each containing *Siva-linga* installed on *a gauripatta.* The ceiling of the *sabhamandapa* is divided into three compartments by the arrangement of two pillars and six pilasters. The sanctum is *pancharatha* on plan and is surmounted by *pancharatha sikhara.* In elevation the temple shows from bottom upwards *adhishthana* mouldings, *jangha, varandika* mouldings and *sikhara.* The *sikhara* is decorated with a mesh of *chaitya*-arches and is crowned by *griva,* double *amalaka, kalasa* and *bijapuraka.* There is a flight of steps on the southern side of *sabhamandapa* which leads to the first floor which also has a sanctum enshrining a *Siva-linga* on a *yonipatta.* The temple is assignable to *circa* eleventh century AD. Only the sanctum of Siva temple at Indokh has survived. The sanctum enshrines a *Siva-linga* on *a gauripatta.* The sanctum measures 1.15m square. A niche in the rear wall of the sanctum contains an image of four-armed Gauri standing in *samabhanga* and carrying *varada, sruk, padma* and *ghata.* She is performing penance and two *agnikundas* placed on her either side. The ceiling of the sanctum has collapsed and the walls have survived to a height of 1.40 m. The ruins of the temple are lying around and comprise ceiling slabs, fragmentary lintels carved with niches containing images of seated Kaumari, Vaishnavi, Virabhadra, Varahi, Aindri, Chamunda, Brahmi and Mahesvari and *gauripatta* with a *Siva-linga,* on the north of this temple is another Siva temple which consists on plan of a sanctum, an *antarala* and a *mandapa.* This temple has been constructed out of the material of an ancient Paramara temple which stood at the site. The sanctum enshrines a *Siva-linga.* Among the ruins are noticed two seated *nandis,* standing cow and calf and a fragmentary *sikhara.* It is thus evident that this site was graced by two Siva temples in the Paramara period i.e. eleventh century AD.

The Chamunda temple at Gajanikhedi in District Ujjain was also surveyed. The original temple was built during Gupta period. The temple was destroyed during the later period and was renovated by the Paramaras of Malwa. The temple has an inscription dated VS 1100 carved on one of the pillars of *antarala.* The temple was again destroyed during the Muslim period and was renovated by Audichya Brahmanas of Gujarat during thirteenth century. This has been recorded in one of the inscriptions in this temple. The temple consists on plan of

a rectangular sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* The walls of the sanctum are plain. The ceiling of the temple is supported by eleven brackets some of which are carved with flying *bhutas.* The top of the ceiling is carved with a full-blown lotus. Inside the sanctum are fixed five sculptures of which four are of seated *matrikas* and one is that of Ganesa. There is a serpent-canopy above the head of Ganesa. The sanctum-doorway is decorated with five *sakhas.* The ceiling of the *antarala* is carved with two full-blown lotuses and rests on two pillars. The *sabhamandapa* has lateral trancepts on the northern and southern sides and its ceiling rests on eight pillars. The ceiling of *sabhamandapa* is of *nabhichchhanda* variety. The ceiling of *ardhamandapa* rests on four pillars. In elevation the temple shows from bottom upwards *adhishthana* mouldings, *jangha* and *varandika* mouldings. The original *sikhara* above the *varandika* mouldings is completely missing and in place of a *sikhara* a flat roof with a modern parapet wall has been constructed on the top of *varandika* mouldings. The temple is an important monument of Paramara period and is assignable to eleventh century AD. The modern accretions around the temple have spoiled its originality. A number of sculptures of *matrikas* are kept in front of the temple.

The, Devi temple at Birmaval, District Ratlam (consists on plan of a sanctum, an *antarala* and a *mandapa.* The sanctum has three niches one on the rear wall and the other two on the lateral walls. The niche in the western wall contains an image of Mahishamardini Durga, locally known as Kamalesvari. The southern niche enshrines an image of Surya. The northern niche contains a *yonipatta* with *Siva-linga.* The ceiling of the sanctum is of *nabhichchhanda* type and consists of a band of six concentric circles. The top of the ceiling is decorated with a full-blown lotus having a *padmakesara.* The sanctum-doorway has four plain *sakhas.* The ceiling of the *antarala* is carved with five full-blown lotuses. The niche in the northern wall of the *antarala* enshrines an image of Ganesa. The ceiling of the *mandapa* is divided into three compartments by an arrangement of four pillars and three pilasters. The temple is *triratha* on plan. In elevation the temple shows from bottom upwards *adhishthana* mouldings, *jangha* divided into two compartments by a plain median band, *varandika* mouldings and *sikhara.* The *pancharatha sikhara* is decorated with *karnasringas* on the corners and *urusringas* on the central projections. The *sikhara* is surmounted by *amalaka, kalasa* and *bijapuraka.* The original temple is assignable to *circa* tenth century AD. It has undergone renovation during modern times.

The Mahadeva temple at Bilpank, District Ratlam ^consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* This is the grandest temple of western Malwa. An inscription of Siddharaja Jai Singh was recovered from the site and has been fixed in the wall of *antarala.* The inscription mentions that the temple was renovated by him. Thus the present temple is a specimen of Paramara-Chaulukya architecture. It is a *panchayatana* temple and has a subsidiary shrine at each of the four corners. The original *sikhara* of the temple was destroyed during Muslim invasion and was renovated by rulers of erstwhile Sailana State. It seems from the available ruins that the temple had an enclosure wall all around. The sanctum enshrines a *Siva-linga.* Around the *Siva-linga* are four pillars which form a central *mandapa* in the sanctum. The ceiling of the sanctum is of *nabhichchhanda* variety and is decorated with eight bands of concentric circles which are decorated with *kola* and *gajatalu*

courses and with eight brackets which probably supported the figures of *surasundaris* which are now missing. The ceiling of the sanctum is supported by ten additional brackets besides the four pillars and four pilasters. In the western wall of the sanctum is fixed an image of Ganesa and another image of seated Siva-Parvati. The sanctum-doorway is elaborately carved with seven *sakhas.* The walls of the sanctum are plain except for a niche in each wall. The ceiling of *antarala* is carved with a full-blown lotus in the centre and is divided into three compartments. Around the lotus are shown friezes depicting Brahma, Vishnu and Mahesa with their consorts and *navagrahas.* The ceiling rests on two pillars and two pilasters. The *sabha-mandapa* of the temple has lateral transepts and its massive and tall pillars are elaborately carved. The ceiling of the central compartment of the *sabhamandapa* is supported by twelve pillars, eight of which form an octagon while the remaining four form a square. The lower portion of the ceiling is octagonal and supports the circular ceiling consisting of nine bands of concentric circles. The top of the ceiling is decorated with a full-blown lotus having a pendant. The circular ceiling is decorated with sixteen brackets showing figures of *surasundaris* in various postures such as dancing, playing on *vina,* drum, *shahnai* and flute. These sculptures form the most attractive feature of the ceiling. The ceilings of the lateral trancepts of *sabhamandapa* rest on six dwarf pillars which are similar in design and ornamentation to the pillars of lateral transepts of *sabhamandapa.* The ceiling is flat and is divided in to two compartments by an arrangement of lintels. The door-sill of the sanctum doorway is also beautifully carved. In elevation the temple shows from bottom upwards *adhishthana* moulding, *jangha* and *sikhara.* The *garbhagriha* of the temple which has been rebuilt shows the *jangha* portion decorated with two bands, of which the lower is plain while the upper one is decorated with diamonds in panels. The restored *sikhara* of the sanctum has lost its originality. The present *sikhara* consists of seven receding tiers of horizontal *pidhas* surmounted by an *ama-laka,* two *kalasas* and *bijapuraka.* The southern *jangha* facade of the temple shows a four-armed male deity standing in *samabhanga,* while the western wall of the sanctum shows four-armed Siva standing in *samapada.* The temple has four subsidiary shrines, one on each corner. Each of these shrines consists on plan of a sanctum, an *antarala* and an *ardhamandapa.*

The/Siva temple known as Mahakalesvara temple. at_Dharad in District Ratlam consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* Its *sabhamandapa* had collapsed and has been renovated recently. The sanctum and the *antarala* of the temples are, however, original. The level of the floor of *sabhamandapa* is lower than the level of the surrounding area and is approached by a flight of seven descending steps on the east. The sanctum enshrines a *Siva-linga* installed on a *yonipatta.* A recess in the southern wall of the sanctum enshrines a modern image of four-armed seated Ganesa while the recess in the northern wall enshrines an image of standing Hanuman. The circular ceiling of the sanctum is supported by twelve brackets, and consists of a band of five concentric circles. The top of the ceiling is decorated with full-blown lotus having a pendant. The sanctum has an underground chamber which is approached by a flight of four steps in the southwest corner. This chamber also enshrines a *Si\a-linga.* The ceiling of the underground chamber is flat and is divided into seven compartments by an arrangement of pillars, brackets and lintels. The sanctum-doorway is carved with seven *sakhas,* while a Saiva *dvarapala* is seen on the right

flank of the sanctum doorway, a Vaishnava *dvarapala* is shown on the left flank. On the *lalatabimba* is carved an image of Vishnu seated in *padmasana.* The portion of the wall above the sanctum-doorway is carved with a number of niches containing seated *saptamatrikas.* The frieze above this depicts seated *navagrahas.* The *antarala* has a niche in the northern and southern walls which are now empty. The ceiling of the *antarala* is carved with a full-blown lotus and rests on two pillars which are carved with niches containing images of deities such as those of Ganesa and Bhairava. A sur-capital has been used in order to raise the height of the pillars. The *sabhamandapa* has lateral transcepts on the southern and northern sides. Its ceiling is supported by twelve pillars which are similar in design and ornamentation. The original ceiling of the *sabhamandapa* which had collapsed has been replaced by a modern one. The ceiling of each of the lateral transepts rests on two pillars which are similar in design and ornamentation of the pillars of *sabhamandapa.* The ceiling of *ardhamandapa* rests on two pillars which differ from the pillars of *sabhamandapa* in design. The plinth of the temple is covered with debris. Above the plinth are *adhishthana* mouldings, *jangha* carved with a single row of sculptures, *varandika* mouldings and a *saptaratha sikhara* decorated with miniature *sikharas* on the corners and with *urusringas* on the *bhadras.* The *sikhara* is surmounted by *amalaka* and *kalasa.* On the first floor of the temple is another temple which consists on plan of a sanctum, an *antarala* and an *ardhamandapa.* There is no image inside the sanctum. The *chaitya*-dormer at the base of the *mulamanjari* of the *sikhara* contains an image of four-armed Varaha uplifting the earth-goddess.

The original Siva temple at Jalod, District Ratlam which belonged to *circa* twelfth century AD had collapsed and a modern temple of Siva has been constructed out of the material of the ancient Paramara temple. On either flank of the door-way are shown standing *Saiva-dvara-palas* and female attendants. The door-sill is also original and is carved on the *mandaraka* with bold lotus-scrolls and two seated male figures. The *lalatabimba* shows a niche containing an image of Ganesa. Inside the sanctum on its southern wall is fixed a niche containing an image of Ganesa. A niche in the western wall contains an image of Mahishamardini. Both these images belong to the original Paramara temple. In front of the temple are lying shafts of pillars, brackets, *sikhara* and *amalaka.* The present temple has a sanctum only and enshrines a modern *Siva-linga* and *nandi.*

The Paramara temple at Lunera, District Ratlam had collapsed long back and a temple of Hanuman has been built on the site of the temple. Around the temple are seen lying the ruins of the original temple comprising a lintel carved with a full-blown lotus, slab of *jangha* craved with a male warrior and an image of Mahishamardini. The temple was probably dedicated to Sakti and belonged to *circa* twelfth century AD.

The Siva temple at Jhar, District Ratlam is assignable to *circa* eleventh century AD. It is now in ruins which are lying scattered at the site. Noteworthy among the ruins are images of Siva, *apsarasas, navagrahas,* Vayu, Varuna, Brahma, Hanuman, dancing Chamunda, Kubera, Isana, Nataraja, Ganesa, Indra, Agni, *nandi,* Bhairava and Durga. On a fragment of the *kumbha* moulding of the temple, are depicted Rama, Sita and Lakshmana, all standing in *tribhanga.* While Rama and Lakshmana hold bow and arrow, Sita holds a lotus-stalk by her right hand. It is a unique piece depicting *Ramayana* scene on the temple. On another

fragment of the *kumbha* moulding of the basement are carved images of Balarama and Revati both standing in *tribhanga*. Balarama holds a plough by his right hand and a wine-cup by his left hand. Both the hands of Revati are in *anjalimudra*. This is a depiction of Krishna-*lila* scene on the temple. On a third fragment of the *kumbha* moulding of the basement is carved an erotic scene wherein a female is seen in union with an animal seated on her back. Above the back of the animal is a seated male. Among the architectural fragments could be noticed fragmentary *adhishthana* mouldings, shafts of pillars, capitals, brackets, door-jambs, ceiling-slabs, door-lintels, slabs of *the jangha,* slabs of the *samvarana* roof of its *sabhamandapa,* and *vedika* mouldings. It is evident from these ruins that this was magnificent temple of Siva ascribable to *circa* eleventh century AD.

Sivagarh in District Ratlam has a Ganesa temple located in Ganesa *gadhi* assignable to *circa* twelfth century AD. It is now in ruins. Some of the ruins of this temple have been fixed in a bridge on the outskirts of the village. Among the ruins fixed in the bridge can be seen two heads of *nandi* and head of a lion. An image of Ganesa from this temple is in the custody of Bhawani Singh Thakur. The sculpture shows four-armed Ganesa, seated in *lalitasana* and carrying indistinct *parasu, padma* and *modakapatra. A* circular *yonipatta* is kept in front of the image of Ganesa.

The Devi temple at Gadhakhankhai, District Ratlam\was constructed during the reign of Parmaras of Malwa in *circa* twelfth century AD. It consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* The original temple has collapsed and only the basement mouldings of its sanctum have survived. The portion of its sanctum above the basement mouldings, including *jangha* and *pancharatha sikhara* have been rebuilt. In elevation the temple shows from bottom upwards *adhishthana* mouldings, plain *jangha, chhadya* and *pancharatha sikhara,* decorated with miniature shrine-models in all the four quadrants. The *sikhara* supports *amalaka, kalasa* and *bijapuraka.* The roofs *of sabhamandapa* and *ardhamandapa* are domical and are crowned by *chandrika, kalasa* and *bijapuraka.* There is a modern *yajnasala* in front of the temple. The ceiling of the sanctum consists of two receding intersecting squares and is decorated on the top with a full-blown lotus. The sanctum enshrines an image of Durga standing in *samapada* on a lotus below which are carved two lions each standing back to back. The sanctum-doorway is modern. The upper portion of the wall above the sanctum-doorway shows a lintel carved with three niches containing images of Sarasvati, Lakshmi and Ganesa. The *antarala, sabhamandapa* and *ardhamandapa* are modern. Most of the ruins of the ancient temple are kept on the platforms around the temple. They comprise fragments of mouldings, pillars, pilasters, capitals, brackets and sculptures. Noteworthy among the sculptures are Siva-Parvati seated in *lalitasana,* Siva seated in *padmasana,* eight-armed Nataraja.four-armed Ardhanarisvara seated in *lalitasana* and four-armed Lakshmi-Narayana seated in *lalitasana.*

On the western side of the Gadhakhankhai village and near the Mahi river stands a Siva temple. The temple is in a ruined state. Only the basement mouldings of the *sabhamandapa* of the temple have survived. The sanctum and the roofs of *sabhamandapa* and *ardhamandapa* have collapsed. Among the sculptural ruins lying at the site may be mentioned images of standing and seated Vishnu, standing and seated Siva, standing and dancing Ganesa and

standing Kubera. Among the architectural ruins lying at the site may be mentioned fragments of basement mouldings, *kutaghantas* of the *samvarana* roof of the *sabhamandapa,* miniature *sikharas,* capitals, pillars and slabs of the ceiling. The temple consists on plan of a sanctum, an *antarala, sabhamandapa* with lateral transepts and an *ardhamandapa.* The pillars of *sabhamandapa* and the lateral transcepts are similar in design and ornamentation. On one of the pillars is carved a mason-mark. The temple is assignable to *circa* twelfth century AD.

Inside the Gadhakhankhai fort were erected at least seven temples during *circa* twelfth century AD. One of these temples was located near the confluence of the Mahi and Kiran rivers. Among the sculptures lying on the site may be mentioned images of seated Siva, standing Ganesa and Nirriti. A *Siva-linga* is also seen fixed on the platform. This was probably a Siva temple. Another temple is located on the left bank of the Kiran river. The pillars of its *sabhamandapa* are seen standing *in situ.* The *adhishthana* mouldings of the temple are covered with debris. Among the ruins of the temple lying at the site can be noticed ceiling slabs, lintels, slabs of roof, capitals and a number of niches containing images of deities. From the lintel of the sanctum doorways it is evident that the temple was dedicated to Siva. The doorjambs of the sanctum-doorway are still standing in a tilted position. The sanctum-doorway consists of five *sakhas.* Two pillars of the *antarala* are highly ornamented. The temple is of *bhumija* style. From the remains it is evident that the temple belonged to the Paramaras and is assignable to *circa* twelfth century AD.

Starting from the eastern side in the Gadhakhankhai fort the following temples were seen:

Temple 1: The plinth of a Siva temple on which are lying a circular *yonipatta* of granite, fragments of basement mouldings and *sikhara* and a niche containing an image of a female-deity. The temple is ascribable to *circa* twelfth century AD.

Temple 2: The plinth of the other temple which is situated near temple 1 is in a disturbed position. The architectural and sculptural fragments of the temple are seen lying over the plinth.

Temple 3: It is a Siva temple. The sculpture of a Jina is also seen at the site. Among the other ruins lying may be mentioned door-jambs carved with *Saiva-dvarapalas.* The temple belongs to *circa* twelfth century AD.

Temple 4: The platform and plinth of the temple is in a disturbed state.

Temple 5: Only the plinth of the temple has survived. Among the ruins seen at the site may be mentioned brackets and shafts of pillars and fragments of *adhishthana* mouldings. Important among the sculptures found at the site is an image of Mahesvari.

On the bank of the Kiran river, is lying a fragment of a pillar carved on each of its four faces with a niche containing an image of a Jina seated in *padmasana* in *dhyanamudra.* It belongs to a Jaina temple of *circa* twelfth century AD. The ruins of a Jaina temple of *circa* tenth century AD are lying on the top of a hill near the village Jodhpur, in between the Mahi and Kiran rivers. Only the pillars are now seen at the site. The pillars are carved with niches containing images of Jaina Tirthankaras.

The ruins of a Paramara temple, ascribable to *circa* tenth century AD, have been found at the village Piploda in District Ratlam. The sculptures of the ancient temple have been fixed above the platform of a temple recently constructed at the site. One of the sculptures shows standing Vishnu while the other portrays seated Siva-Parvati. A sculpture of standing Ganesa is also fixed in the platform.

The village Gunavad in District Ratlam has yielded the ruins of a few Paramara temples. The *adhishthana* mouldings of a Siva temple are seen in Chowk Bazar of the village. The sculptures of two seated *nandis* are also kept at the site. A stone slab of the *jangha,* images of Surya, Nataraja, Ganesa, Narasimha and a panel of dancing *saptamatrikas* belonging to the ancient temple are also kept nearby. Another Siva temple is located on the opposite side of the river Malani. The temple is *pancharatha* on plan and consists of a sanctum, an *antarala,* a *sabhamandapa* with lateral transepts and an *ardhamandapa.* The sanctum enshrines a Siva-*linga.* A niche in the western wall of the sanctum contains an image of Siva-Parvati seated in *lalitasana* on the mount bull. The sanctum doorway has three plain *sakhas* and is a later renovation. The ceiling of the *sabhamandapa* rests on fourteen pillars and two pilasters and is divided into nine compartments. The plain and flat ceiling of the *ardhamandapa* rests on four dwarf pillars. In elevation, the temple shows *kumbha, kalasa, antar, patra, kapota* decorated with *kudus* and a plain *pattika* with panels containing the sculptures of deities. This is surmounted by plain *jangha.* The original *sikhara* which surmounted the sanctum has disappeared. However, a modern dome has been constructed in its place.

The Siva temple at Nagara In District Ratlam is in a ruined state. Only its sanctum has survived. The sanctum enshrines a *Siva-linga.* The temple faces west. The original ceiling of the sanctum had collapsed and has been rebuilt. The sanctum-doorway has collapsed and only its right flank is *in situ.* The ceiling of the *antarala* has also collapsed. There are two niches in the northern wall of the *antarala* which contain images of Mahishamardini and dancing Ganesa. The niche in the southern wall of the sanctum contains an image of seated Uma-Mahesvara. On the basis of architectural and sculptural styles, the temple is assignable to *circa* eleventh century AD. In front of the Siva temple is a temple of Bhavani Mata in the northern wall of which is fixed a *saptamatrika* panel assignable to *circa* eleventh century AD. Some mutilated sculptures of Vishnu, Ganesa and Mahishamardini are kept on the north of Hanuman temple at Nagara.

The ruins_of at least two Paramara temples have been found at Borda in District Ratlam. The ruins of one of these temples have been fixed on a platform built at the site of the original temple inside the village. These ruins include images of Uma-Mahesvara, *nandi* and Ganesa. Among the architectural fragments lying here may be mentioned fragments of *adhishthana* mouldings, lintel of the sanctum-doorway and door-jambs of the temple. Another Paramara temple which was also dedicated to Siva has been renovated in modern times. However, the sculptural and architectural fragments of the ancient temple have been used in the renovation. Noteworthy among the ruins are a fragmentary Surya image, a *Siva-linga* and *nandi.* Among the architectural fragments are shafts of pillars. The temple is assignable to *circa* tenth century AD.

The Siva temple at Gondishankar in District Ratlam Stands on a platform and consists

on plan of a *pancharatha* sanctum, an *antarala* and a *mandapa.* The *mandapa* has collapsed and a modern *mandapa* has been constructed in its place. In elevation the temple shows *adhishthana* moulding, *jangha, varandika* and Siva-linga. The ceiling of the sanctum is circular while the ceiling of the *antarala* is plain and flat and rests on two pillars. The original ceiling slab of the *mandapa* carved with a lotus is fixed in the platform infront of the temple.

(The Parsvanatha temple at Ringnod, District Ratlam consists on plan of a *pancharatha* sanctum and an *antarala.* In elevation the temple shows *adhishthana, jangha* and *varandika.* The original *sikhara* above the *varandika* mouldings is missing and in place of it a modern flat roof has been provided. The *bhadra-niches* on the *jangha* contain images of eight-armed Andhakantaka Siva and Nataraja. The niches of the *kumbha* mouldings of the *adhishthana* contain images of Parvati and Ganesa. It is thus evident that this temple was used by the Jains for installation of Tirthankara images. At present five marble images of Jaina Tirthank-aras are kept inside the sanctum. There is also an underground chamber which is approached by a flight of steps on the north-east corner inside the sanctum. An inscription dated VS 1276 (AD 1219) is fixed in the underground chamber. It records that the chamber was constructed during that period. The temple is therefore, assignable to early thirteenth century AD.

Among the other sculptures found at Ringnod may be mentioned Parvati performing penance and seated Siva-Parvati fixed in the back wall of a Mahadeva temple, an image of Ganesa seated in *lalitasana* in a modern Ganesa temple in Raola Bagh locality and dancing and seated Ganesa and Narasimha fixed on a modern platform in Azad Chowk. Among the architectural members could be mentioned twelve miniature *sikharas* of a *bhumija* temple lying on the eastern side of the river Pingala and the sanctum-doorway of a ruined Paramara temple fixed in the Uklesvara temple in Azad Chowk.

The Lakshmi-Narayana temple at Alot in District Ratlam is located in the compound of the Dharola Mahadeva temple. The temple had collapsed and has been restored in recent times. Only the original *adhishthana* mouldings of the temple are ascribable to *circa* tenth century AD. The temple consists on plan of a sanctum and an *antarala* and enshrines a modern image of Lakshmi-Narayana.

\ Another temple at Alot in District Ratlam 'stands on the east of the *kunda* on a high platform and consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhaman-dapa.* The sanctum, enshrines a Siva-linga installed on *yonipatta.* The sanctum-doorway is elaborately carved with three *sakhas.* The lintel of the sanctum-doorway is carved with three images of Jaina Tirthainkaras. On the door-sill are portrayed Jaina *yaksha* and *yakshis.* From the doorway it is evident that this was used by the Saivites and converted into a Siva temple. The ceiling of *antarala* rests on two elaborately carved pillars. The circular ceiling of *sabhamandapa* which consists of a band of nine concentric circles was decorated on the lower portion with figures of *surasundaris* which are now missing. The western doorway of the *sabhamandapa* is carved with three *sakhas.* It is carved on the *lalatabimba* with an image of Siva-Parvati seated on bull. The ceiling of *ardhamandapa* rests on two pillars. In elevation the temple shows *adhishthana, jangha, varandika* and *sikhara.* The niches on the three *bhadras* of sanctum are lying vacant.

The ancient temple of Nagesvara Parsvanatha at Unhel, District Ratlam which was built

during the reign of Paramaras, had collapsed and a modern temple has been constructed in its place. However, the images of Parsvanatha flanked on either side by Indra and Upendra shown as *chauri*-bearers and the image of Santinatha and Neminatha belong to the original Paramara temple. The image of Parsvanatha is made of black marble and measures 4m high, 1.20m broad and 0.40m thick. The Siva temple at Unhel is located on the north of Nagesvara Parsvanatha temple. The temple consists on plan of a *pancharatha* sanctum and an *antarala.* In elevation, the temple shows *adhisthana, jangha, varandika* and *sikhara.* The sanctum enshrines a *Siva-linga.* The sanctum-doorway is carved with two *sakhas* and shows a seated image of Ganesa on the *lalatabimba.* From the image of a Jaina Tirthankara shown above the niche on the western *bhadra,* it is probable that this temple might have been originally a Jaina temple and later on converted into a Siva temple. The temple is ascribable to *circa* tenth century AD.

Only the sanctum of? Durga temple at Kagpur in District Vidisha has survived. The original *sikhara* above the sanctum, the *antarala* and the *mandapa* have collapsed and have been lost. In elevation the temple shows *jagati* and *adhishthana* mouldings. The *jangha* and its sculptures are missing. The exposed core of the walls of the sanctum has been preserved by water-tightening. There are niches on the *kumbha* moulding of the *adhishthana* which contain images of Kubera, other deities and ascetics. The sanctum-doorway is carved with *panchasakhas.* On the *lalatabimba* is seen seated Durga. The lintel is carved with seated *navagrahas, ashtavasus* and *saptamatrikas.* On the western side of the sanctum is kept an elaborately carved pedestal. In the central niche of the pedestal is carved four-armed Devi seated in *lalitasana* and carrying a mutilated *trisula* by her upper right hand. A pedestal carved with a double-lotus on which are seen two feet, is also kept inside the sanctum. The temple is assignable to *circa* tenth century AD. To the west of Durga temple stands another temple of which only the *sabhamandapa* has survived. The sanctum, *antarala* and *ardhaman-dapa* of this temple have collapsed and disappeared. The ceiling of the *sabhamandapa* rests on four pillars while the ceiling of its lateral transepts rests on six -pillars. The pilasters of the lateral transepts of the *sabhamandapa* have the same design and ornamentation as the pillars. On the basis of architectural style the temple is assignable to *circa* tenth century AD.

The Nilakantha Mahadeva temple, locally known as Chhota Madagin at Lateri, District Vidisha, is dedicated to Siva and is assignable to *circa* twelfth century century AD. The temple consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* However, the *sabhamandapa* and *ardhamandapa* are entirely lost. In elevation the temple shows *jagati, adhishthana, jangha, varandika* and *sikhara*. The *jangha* shows only a single band of sculptures in the lower portion while it is decorated with diamond design and *chaitya-arches* on the upper portion. It is divided into two segments by a median band of *kirttimukhas.* The niches on the *jagati* and *kumbha* mouldings also contain images of deities. The *sikhara* of the temple is of *bhumija* style. It shows at the base of *mulamanjari* on all sides, a double *chaitya*-dormer decorated with lotus-scrolls and mango strings and containing a *kalasa.* The quadrants of the *sikhara* are filled with three horizontal and four vertical rows of miniature *sikharas* of

nagarakuta. The *sikhara* is surmounted by *amalaka, chandrika, kalasa* and *bijapuraka.* The sanctum is *pancharatha* on plan. Its doorway is elaborately carved with five *sakhas.* The *la-latabimba* shows seated Ganesa. The sanctum enshrines a *Siva-linga.*

The Udayesvara Mahadeva temple at Udaipur, District Vidisha, is the grandest among the existing temples of the Paramaras. The temple was built by the Paramara king Udayaditya between the years AD 1050-1080. The temple stood on a spacious platform the mouldings of which have been recently exposed. The temple was surrounded by eight subsidiary shrines of which only six have survived. The main temple consists on plan of a sanctum, an *antarala,* a *sabhamandapa* with lateral transepts and an *ardhamandapa.* The exterior of the temple is carved with sculptures of various deities. In elevation the temple shows *jagati, adhishthana, jangha, varandika* and *sikhara.* The niches on the *jagati* and *kumbha* moulding contain images of different deities. One of the niches on the *kumbha* moulding shows seated Balarama and Revati.

One of the temples of Vishnu in the *dasavatara* group of temples (at Badoh Pathari, District Vidisha *ie* ascribable to *circa* tenth century AD. The temple faces east. At present only the sanctum has survived, the *antarala* and *mandapa* being collapsed. The sanctum-doorway consists of six *sakhas* decorated with lotus scrolls, *mithunas* and diamonds and rosettes. The lintel of the sanctum-doorway shows *garudasana* Vishnu on the *lalatabimba.* Standing *nava-garahas* are shown behind Vishnu. The original ceiling of the sanctum is missing.

The Jaina temple at Badoh Pathari, is assignable in date from *circa* tenth century AD to twelfth century AD. The different cells or shrines of this temple have been constructed at different times. The principal shrine faces north. The principal shrine is crowned with a *nagara sikhara* while the other shrines have either a flat roof or are crowned by a dome. The sanctum-doorway of the principal shrine is decorated with six *sakhas.* The *lalatabimba* shows an image of a standing Jaina Tirthankara. On the central part of the lintel of the sanctum-doorway is carved a frieze of standing *navagrahas.* The sanctum enshrines an image of standing Adinatha. The remaining cells were dedicated to different Jaina Tirthankaras.

The Siva temple at Mandi Bamora, District Sagarl consists on plan of a sanctum, an *antarala,* a *sabhamandapa* with lateral transepts and an *ardhamandapa*. The sanctum enshrines a Siva-linga. The flat ceiling of the sanctum-doorway is elaborately carved with six *sakhas* all of which have been carried over the lintel. The temple was originally dedicated to Vishnu as is evident from the image of seated Vishnu shown on the *lalatabimba.* A frieze of *navagrahas* is carved on either side of *lalatabimba.* The ceiling of the *antarala* rests on three pilasters. The ceiling of the central hall of *sabhamandapa* has collapsed and is missing. It rested on four pillars, one at each corner. The *ardhamandapa* has collapsed and its pillars and ceiling are missing. In elevation the temple shows *jagati, adhisthana, jangha, varandika* and *sikhara.* The *jangha* portions on the southern, northern and western sides have collapsed and the sculptures are missing. The *jangha* shows sculptures of Nirriti, *asparas, vyalas* and amorous couples. The *jadyakumbha* moulding is carved with a niche containing an image of Lakshmi-Narayana. The *pancharatha sikhara* above the sanctum is decorated with nine

bhumi-amalakas on the *karnaratha.* Among the ruins of temple lying scattered at the site may be noted images of dancing Ganesa, seated image of Vishnu, Brahma-Savitri, Brahma, Siva, Ganesa with his consort and other architectural fragments such as ceiling slabs. The temple is made of purple sandstone and is assignable to *circa* eleventh century AD.

There was a Jaina temple also at Mandi Bamora assignable to *circa* eleventh century AD. It had collapsed long back and its sculptures have been fixed in a temple built at the site. These images include sculptures of Parsvanatha and Adinatha.

Besides, the Gond temple of Rajarajesvari at Mandla and the Siva temple at Khaddeori, sculptures of Brahmanical deities assignable to *circa* tenth century AD fixed in a wall of Kherd Mai temple at Hridayanagar, the Ranamuktesvara temple at Kukarramath all in District Mandala were also surveyed and studied.

BUILDING SURVEY.— The Building Survey Project of the Survey undertook the architectural survey of the buildings in different parts of the country. The notable buildings surveyed during the period under the direction of R.D. Trivedi, assisted by Sudhir Kumar, J.B. Chand and C.P. Satsangi, are those of Datia city in Madhya Pradesh.

Besides the well-known Bir Singh Deo Palace at Datia, there are certain other monuments which are remarkable for their architectural and artistic wealth. On the eastern side of Datia city is located a group of *samadhis* (pl. XXXVIII) of Bundela kings (locally called *Makaraba)* on the bank of Karan Sagar tank. The main group of *samadhis* is situated within an enclosure wall entered through a two-storeyed impressive gateway (pl. XXXIX). Of these, the *samadhis* of Raja Parichhat, Raja Vijai Bahadur Singh and Raja Bhawani Singh who ruled Datia region in the nineteenth century, are significant from the architectural and artistic point of view. The *samadhis* are two-storeyed domed structures with verandahs on the ground floor and curtain walls and *chhajjas* on the upper storey. The upper central structure is marked by a semi-circular decoration surmounted by a massive super structure on each side and topped by a dome. On the cardinal sides, below the semi-circular decoration, an. elephant is represented in a niche (pl. XL). The walls contain recessed panels representing paintings of human figures, birds and foliage patterns and plaster relief decoration (pl. XLI).

The ceilings of the domes of the *samadhis* are profusely painted with religious as well as secular themes which represent kings, courtiers, royal processions and gods and goddesses. The painted panels inside the *samadhi* of Raja Parichhat showing royal personalities and nobles with their names inscribed near them provide a valuable source of information regarding the life and culture of those times. Among the gods, Ganesa, Siva-Parvati, Hanuman, etc. are represented but there is predominance of Krishna-*lila* scenes in the subjects portrayed in the paintings on the walls (pl. XLII). Outside the enclosure wall of the *samadhis* mentioned above, there are a number of *chhatris* and *samadhis* of varying sizes on the bank of Karan Sagar, some of them being noteworthy for their architectural merit.

The Prehistory Branch of the Survey under B.P. Bopardikar, assisted by S.N. Raghunath, S.S. Gupta, A.J. Nambhiraju, Pyare Singh and K.M. Girhe surveyed and documented from

architectural angle the British and Japanese structures at Port Blair and Ross Island in the Union Territory of Andaman and Nicobar Islands. The notable structures are briefly described here.

Cellular Jail, Port Blair is a three-storeyed edifice with three wings stretching from the central tower like the rays of a star fish or the spokes of a wheel. The name Cellular Jail is derived from its unique feature as it contains only cells without dormitories. It has seven wings but the earthquake of 1941 and the Japanese bombardment and their occupation of this territory damaged the building. Consequently, four wings out of seven were demolished. With its three remaining wings and the entrance block it now stands as a monument of great historical importance was declared as National Memorial in the year 1979.

Japanese Bunkers were built along the shore-line at Port Blair during Japanese occupation of the Islands from 1942 to 1945. These Bunkers were constructed along the strategic points around the Island.

Deltaman temple at Port Blair was built by Japanese during 1942 and 1945. Located on the bank of a small lake, it makes a picturesque view. It is a single-storeyed simple pagoda type structure. To the right side of the entrance, a block of stone, cylindrical in shape, is erected straight over the rocky platform. The shrine, is without any deity. Its roof is enclosed with a railing of vertically arranged wooden open prayer hall. There are two concave miniature pillars having a canopy on the top. The pillar bears an inscription in Japanese script.

The Chief Commissioner's Bungalow, Ross Island, stands on the crest of the hill. A metalled road, commencing from the jetty and followed by steps, leads to the bungalow. Along the metalled road, there is stone railing reaching upto the bungalow. The superstructure consisting of wooden planks, rafters and tiles have crumbled down. Consequently, brick structures now stand in ruins and wooden material appears as debris. Tree roots have gone inside the structures. The construction of the building is characterized by porcelain tiles paved outside the bungalow and wafer like teak wood tiles are used in superstructure.

To the left of the Chief Commissioner's Bungalow, a Catholic church is erected. It is in Gothic architectural style built in Burmese bricks. A flight of steps leads to the facade of the church as it is raised over a high plinth. There is only one portal in the facade for the entrance inside the building which is flanked by two windows. It has lime plaster inside. In plan, it consists of a nave and sanctum.

To the left of the present jetty and to the extreme west of the Island stands the Resettlement Mess. It measures approximately 20 x 20m. There is an old jetty lying very close to the Mess. It is learnt that this old jetty was used by the British for swimming and fishing. This structure consists of a brick plinth with arches raised over a plastered floor. The main entrance is from the south. Steps are provided from all the four sides.

Swimming Pool Barracks at Ross Island is located near the old jetty and its layout is rec-

tangular. It measures 15 x 15m in dimension built in lime and mortar. There are two steel boilers near the pool. There is a toilet room constructed at the other end. The superstructure of the barrack which measures 150 X 10m has collapsed. In plan barrack consists of a main hall flanked by two galleries and is divided into chambers by a partition wall. Each chamber is interconnected by a wooden gate.

IX. PRESERVATION OF MONUMENTS

MONUMENTS OF NATIONAL IMPORTANCE

AGRA CIRCLE

Uttar Pradesh

1. FORT, AGRA, DISTRICT AGRA.— Missing and decayed portion contained moulded floral and geometrical patterns in stucco on the southern wall of the southern room of Shish Mahal have been restored and convex-glass mirror refixed as per the original.

The floor of the courtyard of Akbari Mahal was repaired by way of replacing worn-out stones with new ones and restoring missing ones in accordance with original patterns. Open joints of veneer stones of rooms and verandah were recessed and pointed. Fresh fine lime concrete was laid out on the roof-terraces of the eastern underground cells to make them watertight.

Parapet walls of Moti Masjid were replastered and lime concrete was provided to its roof-terrace to stop water percolation.

Open joints of veneer stones on the eastern and western facades of Delhi Gate were treated with recessed pointing. Walls flanking the upstairs were replastered.

Repairs to rooms of northern and western quadrangles of Anguri Bagh were executed. Fresh lime concrete was provided to their roof. Floor of north room of northern quadrangle was repaved with red sandstones.

2. JAMI MASJID, AGRA, DISTRICT AGRA.— The restoration work of the north-western fallen minaret was undertaken. Loose and pulverised masonry work of the portion of the minaret from the level of the roof-terrace of the mosque going down to ten metres was taken out and reinforced brick masonry was provided to the inner core of the same portion of the minaret.

3. TAJ MAHAL, AGRA, DISTRICT AGRA.— In continuation of the previous year's work *(1984-85,* p.243), repairs to the first tier of the south-western minaret were resumed. The work of removing broken and worn-out marble stones of veneer, railing and profusely decayed moulded brackets and their restoration with new ones were carried out. Door shutters of Mughal pattern were provided to door apertures of the north-western and eastern and south-eastern minarets. They were also provided to door openings of the north-western burji at the first floor of the mosque to the western side of the main mausoleum.

Repair work of superstructure of the main mausoleum was taken up. Worn-out lime concrete on the berm around the neck of the main dome was laid out. In order to render the roof of main mausoleum watertight, decayed lime concrete on floors of platform of angle kiosks flanking the main dome was replaced by fresh lime concrete (pl. XLIII). Expansion joints of

concrete slabs on the roof of main mausoleum were filled in with Tarplastic.

Damaged lime plaster on walls of corridors of the eastern wing of Shish Mahal was stripped off and replastering was carried out with special lime in accordance with the original. Two cracked stones of the marble veneer on the north-eastern wall of the antechamber of the main mausoleum were replaced with new ones. The cracked portion of the panel of marble veneer on the western wall of the large semi-domical alcove at the southern facade of the main mausoleum was stripped off. It had floral designs carved in bas-relief. A marble *bidi* carved with identical floral patterns in accordance with the original was inserted.

Joints of marble stones on domes of kiosk of Mehman Khana mosque and of eastern Naubat Khana were recessed and pointed for rendering them watertight.

Wornout flagstones on the floor at south-western side of the southern facade of the main entrance gate were replaced with new ones. Two additional steps of red sandstone, each flanking the original red sandstone steps on either side, were provided to make the movement of visitors more easy.

Repairs to *dalans* of the north-western quadrangle at forecourt was further carried out by way of replastering walls and ceilings and rendering colour-wash over the plastered surface. Broken and missing *chajja* stones were restored by new ones and fresh lime concrete was laid out on roof-terraces. Five rooms of eastern wing of forecourt were also taken up for repair. Floors were repaved with red sandstone, walls replastered and entrances provided with doors of Muhgal pattern. Repairs to two rooms at the eastern gate and two rooms at the western gate of the forecourt were also executed, walls were replastered and floors were repaved with new flagstones.

4. AKBAR'S TOMB, SIKANDRA, DISTRICT AGRA.— Collapsed enclosure wall near the fake gate was rebuilt with rubble masonry and its *kanguras* with *lakhauri* bricks (pis. XLIV-XLV).

5. ITIMADU'D-DAULA'S TOMB, AGRA, DISTRICT AGRA.— Weathered and worn-out flagstones of causeways were replaced with new ones and joints recessed and pointed. Broken and missing veneer stones of their plinths were restored and bulged ones reset in position. Compound wall was underpinned at some places and open joints recessed and pointed.

6. GROUP OF MONUMENTS, FATEHPUR SIKRI, DISTRICT AGRA.— In continuation of last year's work (*1984-85,* p.244), repairs to Zenana Rauza were resumed and completed by way of replacing lintels and slabs of the northern side of the roof (pls. XLVI-XLVII). Fresh lime concrete was provided to roof-terrace. Sunken floor of *dalan* was reset and broken stones replaced with new ones.

Repair to octagonal well to the west of Buland Darwaza was further carried out. Missing and broken veneer stones of rooms flanking the steps descending to the well were restored with new ones and open joints of walls pointed to render them watertight.

7. EXPOSED STRUCTURE AND EXCAVATED SITE, FATEHPUR SIKRI, DISTRICT AGRA.— Shops laid bare

along both sides of the road running from Agra Gate to Diwan-i-am were taken up by way of underpinning and pointing of exposed structures.

8. SUN TEMPLE, KATARMAL, DISTRICT ALMORA.— The repair to the wall of the northern facade of temple was carried out. Bulged and pulverised stone masonry from plinth to *sikhara* was stripped off and restoration work was executed in accordance with the original pattern. Worn-out moulded stones at the northern facade were replaced with new ones matching the original.

9. MADAN MOHAN TEMPLE, VRINDABAN, DISTRICT MATHURA.— A compound wall running along the road to the south of the temple was constructed. Cracked and bulged compound wall to the west of the temple was rebuilt after removing roots of tree, and joints pointed. Decayed lime plaster of inner and outer walls of *bhog-shala* was removed and replastering was done.

10. SHAH PIR TOMB, MEERUT, DISTRICT MEERUT.- A missing moulded bracket of the tomb building was restored. Lime concrete was laid out on the platform of the tomb. Red sandstones were provided to the floor around the platform of the Baradari. Weathered and missing veneer stones of the plinth of the Baradari were replaced and restored with new ones.

AURANGABAD CIRCLE

Goa, Daman and Diu

11. SRI MAHADEV TEMPLE, CURDI, GOA.— The dismantled stone members of the temple upto the plinth level were carefully transported to the new site. The new site was bulldozed for surface levelling. Excavation was done into the rock for laying the foundation of the temple.

12. SAPA MASJID TANK, BANDORA, PONDA, GOA.— Big size fallen stones were salvaged from the tank after bailng out water and some desilting. After mild dressing, these ancient stones were reused in reconstruction of loose and dismantled masonry walls and the dislodged and fallen arches around the tank in combination mortar.

13. BOM JESUS BASILICA, VELHA GOA, GOA.— Besides minor repairs to the windows and doors, face lifting to the monument was given by applying oil bound distemper to the interior walls of the main church and white flat paint to the ceiling of the adjacent building and snowcem of ivory colour to the outer face of walls of the annexe building. A vertical crack in the wall of annexe building was stitched by inserting concealed I section girder above the lintel of a window and plastered with matching colour of the adjoining wall surface. Broken and missing glass panes of windows were replaced with new ones.

14. SE CATHEDRAL CHURCH, VELHA GOA, GOA.— After scraping the old whitewash and cleaning the outer surface of the walls, snowcem of ivory colour was applied. Vegetation was cleared from the church and compound wall also.

15. CHURCH OF OUR LADY OF ROSARY, VELHA GOA, GOA.— Snowcem wash was applied to the exterior surface of walls of the church, and all vegetation was cleared from the church and the surrounding area. Broken roof tiles were replaced with new Mangalore tiles.

16. ST. CAJETAN CHURCH, VELHA GOA, GOA.— For water-tightening the roof, Mangalore tiles were removed from the entire roof of the church. Wood preservative was applied to the wooden pillars, beams and rafters after replacing the damaged and decayed wooden beams with new ones and the tiles were relaid. Broken wooden doors and window shutters and glass panes were replaced with new ones (pls. XLVIII-XLIX). Snowcem wash of ivory colour was applied to the outer face of the walls of the church. Vegetation was cleared from the eaves, cornices, facades of the church and from the pathways and roads.

17. ST. ASSISI CHURCH, VELHA GOA, GOA.— Snowcem wash of ivory colour was applied to outer surface of the walls of the church and the annexe building after clearing all vegetation, moss and lichen. The broken and missing roof tiles were replaced with new tiles. Accumulated debris of broken tiles, concrete jelly and dust was removed manually from a height of eleven metres from the first floor of the church. Broken wooden frames, glass panes and fixtures were removed and new ones provided to prevent rain water entering inside the church. Roads and pathways were cleared of all vegetation.

18. ST. AUGUSTINE CHURCH, VELHA GOA, GOA.— Rank vegetation was cleared from the ruins of the church, pathways and roads.

Maharashtra

19. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.— The missing ornamental and floral designs of the upper portion of the west side arch and vertical band of north-west corner of main tomb and corbelled portion of 1st and 2nd gallery of north-west and north-east minarets were reproduced in plaster as per original.

A portion of decayed lime plaster of the floor of west side mosque was removed and fresh plaster was laid with a final coat of shining plaster as per original.

20. ROCK-CUT CAVES, AURANGABAD, DISTRICT AURANGABAD.— The bulged-out and fractured stone masonry wall of the staircase leading to Cave 6 was dismantled and reconstructed and finished with cement plaster matching with the texture of adjacent rock.

The front portion of Cave 7 was laid with cement concrete with proper slope to drain off rain water. The periphery of the area in front overlooking the ravine was provided with G.I. pipe railing to avoid fatal accidents (pls. L-LI).

21. THATTE NAHAR, AURANGABAD, DISTRICT AURANGABAD.— A part of vulnerable pipe line was concealed with random rubble masonry to avoid tampering by the local people for surreptitious use of water. Brick masonry chambers were restored at certain intervals along with the alignment of underground channel.

22. ROCK-CUT CAVES, AJANTA, DISTRICT AURANGABAD.— In continuation of previous year's work *(1984-85,* p.256) the projecting rock above the facade of Cave 14 having collapsed in the past was extended by providing ledge in R.C.C. maintaining consistency in colour and texture of rock and thus the damage due to splashing of rain water was prevented.

23. ROCK-CUT CAVES, ELLORA, DISTRICT AURANGABAD.— In continuation of last year's work *(1984-85,* p.256) the weathered facade of Cave 2 was provided with R.C.C. ledge simulating rock surface in colour, texture and contour as per original and splashing of rain water on life-size sculpture of *dvarapala* was arrested.

The monolithic *manastambha* 9.30m in height on the west side of the courtyard of Cave 32 was broken into three pieces in the year 1860. The pedestal of the *manastambha* was strengthened by fixing the cracked and loose pieces of stones with epoxy.

The missing portion of the pedestal was restored in concrete using stainless steel reinforcement and a base of epoxy concrete was given to strengthen the bond between stone concrete. The entire operation is being resumed as per original with the help of line drawing published in the book *Cave Temples of India* by J. Burgess. The state P.W.D. authorities are giving last-minute touches to the design for re-erection of the fallen pieces one over the other.

24. SION FORT, SION, BOMBAY.— The front portion of double tiled roof of the Portuguese watch tower was repaired by replacing the broken tiles with new ones. The work of removal of pulverised plaster from inner and outer faces of the walls and replastering the same with cement mortar is in progress.

25. LAKHOJI JADHAVRAO CHHATRI, SINDHKEDRAJA, DISTRICT BULDANA.— The patches of the dead plaster from the drum surface of dome were raked out and relaid and rendered watertight.

26. SEVEN MUHAMMADAN TOMBS, THALNER, DISTRICT DHULE.— The encroachments in the protected area were removed and fenced with barbed wire with entrance and wicket gate.

BANGALORE CIRCLE

Karnataka

27. TIPU SULTAN PALACE, BANGALORE, DISTRICT BANGALORE.— TWO accretionary skylight openings provided recently in the roof of the central hall and the western wing were removed and the roof was restored and watertightened in confirmity with the original. The missing ornamental eaves in wood were replaced as per the original. The decayed wooden beams in the western wing were replaced with new ones.

28. TIPU'S LODGE, NANDI HILLS, DISTRICT BANGALORE.— The missing wooden architectural members such as doors and windows of the central hall, the entrance and the rear wall, wooden ceiling planks in the kitchen and front verandah were replaced by teak wood members. The

whole roof of the structure was watertightened by providing two courses of flat tiles set in cement mortar mixed with waterproofing compound and then top plastered with combination mortar. The decayed plaster was removed and scraped wherever necessary and replastered as per the original. The fallen walls of the lower *mandapa* were reconstructed as per the original.

29. Panchalingeswara Temple, Hooli, District Belgaum.— The dilapidated closed *mandapa* in the complex was taken up for conservation. The foundation of the structure was strength ened by underpinning. The dislodged veneering stones of the walls were reset and the missing stones were replaced. Wherever the core of the wall was missing it was filled with rubble mixed with mortar. New stone perforated windows were provided in the walls as per the original. Broken beams and roof slabs were replaced and the roof of the *mandapa* was watertightened by laying 15 cm thick brick jelly concrete and then top plastered with combination mortar.

30. ANANTHASAYANA TEMPLE, ANANTHASAYANAGUDI, DISTRICT BELLARY.— Missing and broken capitals, heavy beams and roof slabs were replaced and then the roof was watertightened by providing 15cm brick jelly concrete and the top plastered with combination mortar.

31. KALLESWARA TEMPLE, HIREHADAGALI, DISTRICT BELLARY.— In continuation of last year's *(1984-85,* p.239) work the dismantled walls of the *garbhagriha* of Siva shrine was reconstructed after strengthening the foundation by providing cut stone masonry over a thick bed of concrete in the foundation. The dismantled *sikhara* was also reconstructed using new moulded stones wherever necessary along with the old ones. The three broken beams in the *navaranga* were replaced with new ones (pls. LII-LIII).

32. PATTABHIRAMA TEMPLE, KAMALAPURAM, DISTRICT BELLARY.— The missing flooring stone slabs in the *pradakshinapatha* covering an area of 275sq.m were replaced as per the original. The joints of the slabs were pointed in combination mortar.

33. VITTALA TEMPLE, VENKATAPURA, DISTRICT BELLARY.— The work of providing missing and broken pillars, capitals, beams and roof slabs of the dilapidated *navaranga* of the main shrine is in progress. Three pillars, seven capitals (1.20 X 1.20 X 0.45m) seven beams (3.9 X 0.9 X 0.7m) and roof slabs (3.0 X 0.6 X 0.3m) were hauled up to their original positions and the work is in progress.

34. AMBIGERGUDI, AIHOLE, DISTRICT BIJAPUR.— The enclosure wall running to a length of 120m was constructed to a height varying between 1.0m and 1.7m in coursed rubble masonry set in cement mortar. Above the wall iron angle, with barbed wire fencing to a height of 1.25m was provided.

35. BADIGERGUDI, AIHOLE, DISTRICT BIJAPUR.— The debris covering the plinth of the temple to a height of 1.5m was completely removed and exposed.

36. GOUDERGUDI, AIHOLE, DISTRICT BIJAPUR.— Flagstone apron on the west of the temple to a length of 15m and to a width of 4.5m was provided over sand bed to avoid the rain water entering into the foundation.

37. HUCHIMALLIGUDI, AIHOLE, DISTRICT BIJAPUR.— The missing hood stones of the roof were replaced and watertightened. An apron of 3m width of stone slabs was provided alround the monument to avoid rain water entering into the foundation.

38. RACHIGUDI, AIHOLE, DISTRICT BIJAPUR.— The enclosure wall running to a length of 163m was constructed to a height of 60cm in coursed rubble masonry set in cement mortar. Above the wall, angle iron with barbed wire fencing to a height of 1.25m was provided. A wicket gate was also provided.

39. TRIAMBAKESWARA TEMPLE, AIHOLE, DISTRICT BIJAPUR.— The missing flagstones of the apron around the temple to an area of 41.6sq.m was provided.

40. CAVE, BADAMI, DISTRICT BIJAPUR.— The existing random rubble masonry in front of Cave 4 was dismantled and cut-stone masonry wall was constructed for extending the platform in front of the cave. The parapet wall was given rock appearance to match with the surrounding. The steps leading to cave were widened. Drainage between Caves 3 and 4 was improved by laying hume pipes.

41. ASAR MAHAL, BIJAPUR, DISTRICT BIJAPUR.— The dead and damaged concrete bed of the main tank (51.65 x 39.60m) and a side tank (47.95 X 10.00m) was removed and laying fresh concrete as per the original is in progress.

42. GOL GUMBAD, BIJAPUR, DISTRICT BIJAPUR.— The dead plaster over the walls of the upper canopy was peeled off and replastered with lime mortar as per the original after washing the walls thoroughly.

43. BANASHANKARI TANK, CHOLACHAGUDDA, DISTRICT BUAPUR.— With a view to desilting the tank (110 X 100m) the vegetation and the slush was removed. The work is in progress.

44. BASAVANNA TEMPLE, HALLUR, DISTRICT BIJAPUR.— The roof of the temple was watertight ened by grouting and pointing the joints. The roof of the *mahadvara* was watertightened by laying brick jelly concrete and top plastering with combination mortar. In *mahamandapa* and *mukhamandapa* the damaged stone slabs of the flooring were replaced and joints pointed. An apron of 2m width was provided around the monument to arrest the rain water entering into the foundation. The dislodged steps of the *mukhamandapa* were reset.

45. ASOKAN ROCK INSCRIPTION, SIDDAPURA, DISTRICT CHITRADURGA.— A designed grill with wooden frame was fixed to keep the inscription safe.

46. BANASHANKARIDEVI TEMPLE, AMARGOL, DISTRICT DHARWAR.— The missing *kakshasana* portion on the southeastern side was replaced as per the original. Among the two broken beams one which was heavily damaged was replaced and the other was strengthened by providing concealed I-section girder. The missing *hara* portion was provided with cut sandstone blocks. The dilapidated *sikhara* was dismantled and reset as per the original by replacing some of the missing and damaged members. The joints were pointed. The roof of the temple was watertightened by laying 20cm thick brick jelly concrete and top plastering with combination mortar.

47. JAINA TEMPLE, LAKKUNDI, DISTRICT DHARWAR.— The reconstruction of the fallen *prakara* in front of the temple is in progress.

48. MASKINABHAVI, LAKKUNDI, DISTRICT DHARWAR.— The northern side wall and the niches of the dilapidated tank was dismantled and reconstructed; the walls of the northeastern corner have been dismantled and reconstruction is in progress.

49. CHANNAKESAVA TEMPLE, ARKERE, DISTRICT HASSAN.— The out-of-plumb walls of the temple were dismantled after carefully documenting and then reset as per the original after strengthening the foundation. The dislodged *sikhara* was also dismantled and reconstructed. The joints were grouted and pointed. The roof was watertightened.

50. KESHAVA TEMPLE, BELUR, DISTRICT HASSAN.— The interior walls of the Sowmyanayaki shrine which has no veneering stones was plastered with combination mortar toned to original stone colour. The dislodged *chhajja* stone of the Rama shrine was carefully removed and reset as per the original.

51. RAMALINGESWARA TEMPLE, HALEBIDU, DISTRICT HASSAN.— The western wall of the *prakara* was conserved by providing veneering stones on the exterior wherever necessary and filling the core with random rubble set in mortar.

52. KOLARAMMA TEMPLE, KOLAR, DISTRICT KOLAR.— The open space in between the entrance of the main temple and *mahadvara* was partly paved with the available slabs and joints pointed.

53. PANCHAKUTA BASTI, KAMBADAHALLI, DISTRICT MANDYA.— The Shantinatha *basti* in the complex was completely dismantled after proper documentation as it was on the verge of collapse due to sinking of the foundation. After strengthening the foundation by providing stone masonry over a 30cm concrete bed, the resetting of the temple is in progress.

54. NARAYANASWAMY TEMPLE, MELKOTE, DISTRICT MANDYA.— The stucco figures in the *devakoshthas* on the northern and western outer parapet have been mended and conserved. The decayed plaster on the inner parapet and the merlons were removed and replastered in combination mortar.

55. DARIA DAULAT BAGH, SRIRANGAPATNA, DISTRICT MANDYA.— The damaged wooden railings fixed in between the pillars in the corridor were replaced. The cultural notice board was also fixed.

56. RANGANATHASWAMY TEMPLE, SRIRANGAPATNA, DISTRICT MANDYA.— The open space in between *mahadvara* and Hyder Ali *mandapa* was paved with stone slabs for avoiding stagnation of rain water.

57. VIJAYANARAYANA TEMPLE, GUNDLUPET, DISTRICT MYSORE.— The northern and southern walls of the temple which had gone out-of-plumb due to sinking in foundation were dismantled along with superstructure and reconstructed as per the original after strengthening the foundation by laying 15cm thick concrete bed. The roof of the *navaranga* and the *garbhagriha* was watertightened by providing two courses of flat tiles over a bed of brick jelly lime concrete. The top was plastered with lime mortar. The dislodged stone flooring around the main shrine and *sukdnasi* has been reset after dressing sides and top. Drainage was provided for taking out the *abhisheka* water from the *garbhagriha* (pls. LIV-LV).

58. SRIKANTESWARA TEMPLE, NANJANGUD, DISTRICT MYSORE.— The electrical batons fixed to the seven *talas* of the eastern main *gopura* were removed and the stucco figures, mouldings, cornices and pilasters on the eastern, western and northern sides have been mended and conserved as per the original. The flooring in between the kitchen and *sivakuta* was reconditioned by providing stone slabs after removing the irregular stones laid for the floor.

59. KIRTINARAYANA TEMPLE, TALADADU, DISTRICT MYSORE.— The broken beam in the *mahadwara* was strengthened by inserting concealed Rolled steel Joist. The brick masonry *sikhara* was watertightened and plastered after mending the damaged stucco figures and mouldings. The *sikhara* was toned upto its original colour. Iron grill doors were provided to the two subshrines in the *navaranga.*

60. MADHUKESWARA TEMPLE, BANAVASI, DISTRICT NORTH KANARA.— The roof of the *mahadvara, yagashala* and sculptures at Gallery 2 was watertightened by providing two courses of flat tiles over a bed of brick jelly concrete. The top was plastered with combination mortar.

61. VIRUPAKSHA TEMPLE, BHATKAL, DISTRICT NORTH KANARA.— The missing huge slabs of the roof were replaced.

62. PARASHURAMA SHRINE, CHANDRAGUTTI, DISTRICT SHIMOGA.— The dilapidated shrine was dis mantled and reconstructed as per the original after strengthening the foundation by provid ing stone masonry over concrete bed.

63. RENUKADEVI TEMPLE, CHANDRAGUTTI, DISTRICT SHIMOGA.— The dead concrete over the roof had become spongy and was absorbing the rain water. When the dead concrete was removed

it was found that it had double roof and there was no need for laying concrete. The joints of the inner roof were grouted and pointed and the outer roof was provided with hood stones after grouting and pointing the joints. Thus the roof was watertightened. The foundation of the temple was strengthened by underpinning.

64. BASTIS AND INSCRIPTIONS, HUMCHA, DISTRICT SHIMOGA.— The roof of the *mandapa* in front of the main *basti* was watertightened by laying two courses of flat tiles over a bed of brick jelly concrete after removing the dead concrete. The flooring of the *mandapa* was repaired by relaying the slabs and replacing the missing ones.

65. RAMESWARA TEMPLE, KELADI, DISTRICT SHIMOGA.— The dismantling of the decayed and damaged rafters, beams and pillars of the *yagashala* and *chandrashala* was completed and replacing with new ones is in progress. The accretionary mud walls in the *yagashala* and *chandrashala* were removed.

66. KAITABHESWARA TEMPLE, KOTIPURA, DISTRICT SHIMOGA.— The accretionary lime concrete provided over complete *sikhara* which had become dead and spongy was removed to expose beautifully carved members and sculptures. The *sikhara* was watertightened by grouting and pointing. The dead concrete layers (weighing 200 tonnes) over the roof of the temple were removed. It was found that the roof did not require any concrete as the roof slabs were smoothly dressed and provided with channels. By simply grouting and pointing the joints the roof has been watertightened. The foundation of the temple was strengthened by underpinning.

BHOPAL CIRCLE

Madhya Pradesh

67. KAMLAPATI PALACE, BHOPAL, DISTRICT BHOPAL.— In continuation .of last year's work *(1984-85,* p.215) the damaged and decayed plaster has been replaced with fresh one. The damaged and missing *chhajja* stones have been replaced with fresh ones. The roof concrete of 2nd and 3rd floor has been reconditioned with fresh concrete to make the terrace watertight.

68. OLD TEMPLE, KODAL, DISTRICT DAMOH.— Restoration of original traces of stone masonry compound wall and watertightening of the shrine is in, progress.

69. ROCK-CUT CAVES, BAGH, DISTRICT DHAR.— In continuation of last year's work, *(1984-85,* p.215), three R.C.C. pillars with R.C.C. beams have been provided to support R.C.C. slab resting on beams and outer wall of the Cave 4 (pls. LVI-LVII). The R.C.C. pillars have also been extended to support the ceiling. In addition to the above, four more R.C.C. pillars were constructed. Deterioriated loose surface of top terrace of caves was relaid by cement concrete. The work of construction of drain for rain water and replacement of damaged floor concrete of Cave 5 and corridor in front of Cave 4 and 5 is in progress.

70. BHOJASHALA, DHAR, DISTRICT DHAR.— In continuation of last year's work, *(1984-85,* p.215), all the damaged and cracked beams and slabs have been replaced with fine chisel dressed Zeerabad quarry limestone ones followed by lime concrete terracing thereon. The missing *chhajjas* have also been provided with Zeerabad quarry limestone *chhajjas.* The work has been completed.

71. GROUP OF MONUMENTS, MANDU, DISTRICT DHAR.— The general view of the monuments has been given facelift by removal of vegetational growth, reconditioning approach roads, providing pathways with red *morum,* and lime concreting terrace and floors. All the doors, windows, posts, railings, notice boards etc. were also painted.

72. JAMA MASJID, MANDU, DISTRICT DHAR.— The decayed and pulverized roof concrete has been replaced with fresh lime concrete to render the roof terrace watertight. The work has been completed.

73. SOMVATI KUND, MANDU, DISTRICT DHAR.— In continuation of last year's work, *(1984-85,* p.216), the dumped and settled debris of fallen portions of enclosure wall of the tank and the dump behind it, have been cleared and removed out side the tank after sorting out the useful stones for reuse. The work is in progress.

74. TAVELI MAHAL, MANDU, DISTRICT DHAR.— In continuation of last year's work, *(1984-85,* p.216), the damaged and missing *chhajjas* of first floor have been replaced with fine chisel dressed Zeerabad quarry limestone *chhajjas.* The work has been completed.

75. TOMB OF SHAHNAWAZ KHAN, BURHANPUR, DISTRICT EAST NIMAR.— In continuation of last year's work *(1984-85,* p.216), the restoration of damaged and collapsed wall with stone masonry, replacement of damaged floor concrete with fresh lime concrete and watertightening of roof and dome is in progress.

76. MAMLESHWAR TEMPLE, MANDHATA, DISTRICT EAST NIMAR.— In continuation of last year's work *(1984-85,* p.216) the floor around the temple has been paved with flagstone flooring over lime concrete base.

77. SIDDHNATH TEMPLE, MANDHATA, DISTRICT EAST NIMAR.— In continuation of last year's work *(1984-85,* p.216), the restoration of block stone is completed with departmental available stones in 1:2 lime mortar. The shrine has also been watertightened to check the seepage of rain water.

78. BADAL MAHAL GATE, CHANDERI, DISTRICT GUNA.— The damaged and missing masonry of bastions and doorway jambs have been replaced with fresh fine chisel dressed ashlar masonry. The decayed and missing plaster battlements have been replaced with fresh one. The outer area has been cleaned, levelled and dressed. Approach path has been provided with flagstone pavement upto the monument. The area has been enclosed with barbed wire fencing and angle iron posts to avoid encroachment. The work is in progress.

79. KOSHAK MAHAL, CHANDERI, DISTRICT GUNA.— The remaining portion of compound wall in R.R. stone masonry has been completed with the provision of an angle iron gate.

80. SINGHPUR PALACE, CHANDERI, DISTRICT GUNA.— The upper terrace of the main palace and annexe building have been reconditioned and watertightened. All the window openings have been provided with M.S. grill and outer door openings on the ground floor with collapsible door shutters. The main gate of the palace complex is provided with new M.S. gate.

81. BASTION 3 OF MANMANDIR PALACE, GWALIOR, DISTRICT GWALIOR.— The pulverized, weathered and decayed masonry of bastion 3 and the flanking wall have been replaced with fresh fine chisel dressed ashlar stones. The weathered and decayed rock surface below the foundation of bastion 3 will now be removed and replaced with reinforced stone masonry retaining wall finished with cement concrete with rock facing. The work is in progress.

82. JAIN COLOSSI (EK PAHAR KI BAOLI), GWALIOR, DISTRICT GWALIOR.— Restoration of damaged and missing enclosure wall with R.R. stone masonry to check the encroachment is in progress.

83. SAS BAHU TEMPLE, GWALIOR, DISTRICT GWALIOR.— Masonry joints of the temple were sealed with mortar to make it watertight. The protected area is fenced with G.I. barbed wire and angle iron posts with a provision of M.S. gate and wicket gate. The work is in progress.

84. TELI KA MANDIR, GWALIOR, DISTRICT GWALIOR.— The damaged, broken and sunken flag stone flooring of the platform around the temple is being removed and relayed with flagstone flooring over lime concrete base with new finish stones with fine joints. The work is in progress.

85. TOMB OF MUHAMMAD GHAUS, GWALIOR, DISTRICT GWALIOR.— In continuation of last year's work, *(1984-85,* p.217), the replacement of damaged and missing stone *jallis* with new ones with original geometrical pattern, is in progress.

86. TOMB OF TANSEN AND ADJOINING MOSQUE, GWALIOR, DISTRICT GWALIOR.— In continuation of last year's work *(1984-85,* p.217), the damaged and missing flag-stone flooring has been replaced with fresh flag-stone flooring finished with fine joints. The walls of the mosque have also been underpinned and roof watertightened.

87. MADAN MAHAL, JABALPUR, DISTRICT JABALPUR.— In continuation of last year's work *(1984-85,* p.217), the height of the wall has been raised in coursed rubble stone masonry.

88. SIVA TEMPLE, BHOJPUR, DISTRICT RAISEN.— In continuation of last year's work *(1984-85,* p.217), the damaged missing and sunken cut-stone flooring has been replaced with fresh fine chisel dressed cut-stones and finished with fine joints.

89. BUDDHIST MONUMENTS, SANCHI, DISTRICT RAISEN.— In continuation of last years work

(1984-85, p.234), the broken, damaged and missing Gupta style brick tiles in the floor of Monastery 51 are being replaced with new brick tiles of same size.

90. SIVA TEMPLE, MANDI BAMORA, DISTRICT SAGAR.— Restoration of damaged and missing stone flooring with fresh chisel dressed stones finished with fine joints is in progress.

91. TEMPLE, ASHTA, DISTRICT SEONI.— In continuation of last year's work *(1984-85,* p.234), of providing and fixing flag stone flooring to the platform and watertightening of *sikhara* to check the seepage of rain water through it, is in progress.

92. GADARMAL TEMPLE, BADOH PATHARI, DISTRICT VIDISHA.— In continuation of last year's work *(1984-85,* p.234), the damaged and sunken approach steps have been restored, the *sikhara* has been made watertight to check the seepage of rain water. The area has been enclosed with G.I. barbed wire fencing and angle iron post with the provision of M.S. gate.

BHUBANESWAR CIRCLE

Madhya Pradesh

93. MAHADEVA TEMPLE, BASTAR, DISTRICT BASTAR.— Barbed wire fencing on angle iron posts with main gate in front has been provided towards the southern side of the temple complex upto a length of 200m and the roof of the *mukhamandapa* of the temple has been watertightened.

94. BHIMA KICHAKA TEMPLE, MALHAR, DISTRICT BILASPUR.— Barbed wire fencing on angle iron posts has been provided all-around the temple of Bhima Kichaka at Malhar.

95. NARAYANA TEMPLE, NARYANPUR, DISTRICT RAIPUR.— The missing compound wall of the Narayana temple has been restored by new stone masonry wall as per the original. The dislodged *mukhamandapa* of the same temple was also attended to.

Orissa

96. CHAUSATH YOGINI TEMPLE, RANIPUR JHARIAL, DISTRICT BOLANGIR.— The uneven floor of the temple is being dressed to drain out the rain water. Missing coping stone of the circular structure is replaced with the help of new one.

97. STUPA, LALITGIRI, DISTRICT CUTTACK.— The excavated stupa of Lalitgiri which yielded relic caskets was also attended to by levelling the ground around the stupa.

98. MONASTIC COMPLEX, RATNAGIRI, DISTRICT CUTTACK.— Watertightening and replacement of missing masonry was completed at Ratnagiri Monastic complex.

99. PARASURAMESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.— The temple of Parasuramesvara used to suffer from water stagnation during monsoon. Hume pipe drain of about 160m long was provided to drain out the rain water from the temple complex.

100. LINGARAJA TEMPLE, BHUBANESWAR, DISTRICT PURI.— The left hand side uneven stone paved floor of Lord Lingaraja temple was dismantled and replaced by new ones.

101. RAJARANI TEMPLE, BHUBANESWAR, DISTRICT PURI.— The platform of Rajarani temple was having uneven flooring at the west. The worn-out and affected sandstones were removed and replaced by laterite stones to bring harmony in the complex. The roof of *jagamohana* was also watertightened.

102. BRAHMESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.— The restoration work of the tank at the back of Brahmesvara was taken up; the work is in progress.

103. FORT AND EXCAVATED REMAINS, SISUPALAGARH, DISTRICT PURI.— The huge entrance of the Sisupalagarh Fort is located very near to the river Gangua (stream). During rainy season flood water used to affect the land erosion and submerge the stone masonry. To stop erosion, one toe wall about lm in height was provided. The structure of the main gateway is attended by watertightening and pointing of joints.

The excavated remains at Sisupalagarh were being encroached upon by the local farmers. All the encroachments were removed and a small 1 m high parapet wall was provided at the site to prevent further encroachment in future.

104. MONUMENTS AT UDAYAGIRI (BHUBANESWAR), DISTRICT PURI.— The fencing around Udayagiri and Khandagiri hill has been completed during the year.

105. BRICK TEMPLE, KONARAK, DISTRICT PURI.— The small brick temple known as Mayadevi in Sun Temple complex is attended to by providing flooring as per the-original and watertight ening of the top of the walls.

106. SUN TEMPLE, KONARAK, DISTRICT PURI.— Conservation work of Sun temple was taken up. The grand staircases on the east and north were completely restored by providing stone masonry steps. The north-east corner of the parapet wall alongwith upper part of a chariot wheel was also repaired.

107. COMPOUND WALL OF KONARAK MUSEUM, KONARAK, DISTRICT PURI.— Compound wall was provided in front of the museum with provision of an entrance gate and connecting pathways leading to museum building.

108. NARASIMHA TEMPLE, PURI, DISTRICT PURI.— Narasimha temple was completely deplastered and consolidated and watertightening work is in progress (pl. LVIII).

109. JAGANNATH TEMPLE, PURI, DISTRICT PURI.— The deplastering work above springing level was taken up as per the recommendation of the Expert Committee and north-east corner to south-west corner was completely deplastered upto a height of 3m. To avoid any further fall of the plaster from the upper part, the bottom portion of thick plaster was attended to by edging work (pl. LIX).

CALCUTTA CIRCLE

West Bengal

110. SIDDHESVARA TEMPLE, BAHULARA, DISTRICT BANKURA.— Vegetation was eradicated from the monument and also from the adjacement compound. M«ram-apron with brick-edging was pro vided around the temple.

111. JOR BANGLA TEMPLE, BISHNUPUR, DISTRICT BANKURA.— Cleaning of vegetation and uproot ing of trees from the monument and also from the compound has been done. Muram-apron has been provided along with brick edging around the temple.

112. KALACHAND TEMPLE, BISHNUPUR, DISTRICT BANKURA.— Trees were uprooted and vegeta tion was eradicated along with the spreading of *murram* with brick-edging around the temple. Underpinning on the damaged patches of the temples was also done accordingly.

113. LALJI TEMPLE, BISHNUPUR, DISTRICT BANKURA.— Cleaning of vegetation and uprooting of trees have been done along with the setting of a wooden gate at the entrance.

114. MADAN MOHAN TEMPLE, BISHNUPUR, DISTRICT BANKURA.— Cleaning of vegetation and uprooting of trees from the monument and also from the compound has been done. *Muram*-apron has been provided along with brick-edging around the temple.

115. NANDALAL TEMPLE, BISHNUPUR, DISTRICT BANKURA.— Ornamental architectural stones were provided in the masonry of the eastern porch of the temple and also in the *pradakshinapatha* with lime concrete mortar. Vegetation was cleared from the compound of the monument, and muram-apron was provided with an edging of brick around the temple.

116. STONE CHARIOT, BISHNUPUR, DISTRICT BANKURA.— Vegetation was eradicated and small plants were uprooted from the monument. The adjacent area was also cleared of debris and vegetation.

117. SHYAMRAI TEMPLE, BISHNUPUR, DISTRICT BANKURA.— Muram-apron was provided around the temple with brick edging after the clearance of vegetation from the compound as well as from the monument. Watertightening work was done at the top alongwith fitting of loose tiles on the roof. Lime concrete was also re-laid on the damaged floor. Steps of the approach to the temple were plastered.

118. RADHA DAMODAR JEW TEMPLE, GHUTGARYA, DISTRICT BANKURA.— Vegetation was cleared along with the uprooting of trees and plants from the compound. Damaged floor was repaired by relaying lime concrete.

119. RATNESVARA TEMPLE, JAGANNATHPUR, DISTRICT BANKURA.— Vegetation was cleared and small plants were uprooted from the temple and attached compound.

120. SHYAMSUNDAR TEMPLE, MADANMOHANPUR, DISTRICT BANKURA—Vegetation was cleared and small plants were uprooted from the temple and attached compound.

121. ROCK INSCRIPTION, SUSUNIA, DISTRICT BANKURA.— Vegetation has been eradicated and a corrugated sheet was fixed to protect the inscription by providing a shade.

122. TEMPLE OF RADHABINOD (JOYDEB), KENDULI, DISTRICT BIRBHUM.— Vegetation was cleared and barbed-wire fencing was repaired. The gate of the entrance was also painted.

123. TOMBS OF BAHRAM SAKKA, SHER AFGAN AND NAWAB QUTUBUDDIN, BURDWAN, DISTRICT BURDWAN.— Vegetation was cleared from the compound. Pointing has been done on the cracks of the graves in composite mortar. Brickwork in the inner boundary walls has been done along with plastering.

124. PANCHARATNA TEMPLE, KALNA, DISTRICT BURDWAN.— Lime terracing on the roof of the temple has been done along with the plastering on the outside and inside walls.

125. SIVA TEMPLE, KALNA, DISTRICT BURDWAN.— Clearance of vegetation from the compound of the monuments has been done along with the brick work on the walls and lime terracing on the roof.

126. PALACE, COOCH BEHAR, DISTRICT COOCH BEHAR.— Dirt and dust from the palace has been cleared along with the eradication of vegetation from the compound. Deep-rooted trees at the top of the palace were also uprooted. Grouting and pointing have been done on the cracks of the roof. Six small domes and the gate of the main entrance were painted.

127. TOMB OF GENERAL LLOYD, DARJEELING, DISTRICT DARJEELING.— The adjacent area to the tomb has been cleared of vegetation. White washing of the tomb has been done along with the painting of railings around the tomb.

128. TOMB OF ALEXANDER CSOMA DE KOROS, DISTRICT DARJEELING.— Cattleproof gate was fixed at the main entrance of the cemetery. The railings along with the tomb were also painted.

129. BRINDABAN CHANDRA'S MATH, GUPTIPARA, DISTRICT HOOGLY.— The clearance of jungle from the compound has been done. Brickwork and lime terracing have also been done on the

compound wall. The floor of the Krishna Chandra temple was plastered. The doors of the Ramchandra temple were renewed, repaired and painted.

130. BARADUARY MASJID, GAUR, DISTRICT MALDA.— Lime *surkhi* plastering on the pillars of the gateway of the mosque was done. At the main entrance of the mosque, lime concreting has been done over a layer of bricks.

131. CHIKA MOSQUE, GAUR, DISTRICT MALDA.— A 10 cm thick lime concrete flooring alongwith underpinning at different points of the walls was completed. A 0.50m wide lime concrete-apron has also been provided. The damaged flat roof was repaired by relaying 10cm thick lime concrete.

132. DAKHIL DARWAZA, GAUR, DISTRICT MALDA.— A cattleproof gate was fixed after removing two non-matching brick pillars. Underpinning at various points of the walls including minarets in 1:2 lime *surkhi* mortar has been done. Restoration of ornamental brickwork in 1:2 lime *surkhi* mortar with l/10th cement has been done and thus *'kangura'* design was executed wherever necessary. Watertightening to the top of the minarets by relaying 1:3 cement, sand mortar after removing two layers of bricks has been done. At the both side of the central arched roof lime terracing was relaid in the proportion of 7:2:2 brick *khoa,* lime and *surkhi* mixed with 1/8 cement with an average thickness of 75mm.

133. QADAM RASUL MASJID, GAUR, DISTRICT MALDA.— Underpinning work at different places of the walls of the mosque has been done.

134. TWO STONE PILLARS, GAUR, DISTRICT MALDA.— Two stone pillars were strengthened by piling earth and providing a masonry platform. Barbed wire fencing around the pillars has also been done.

135. TOMB OF AZIMUNNISSA BEGUM, AZIMNAGAR, DISTRICT MURSHIDABAD.— Vegetation was cleared from the compound. Flooring was done in some cells of the tomb.

136. RESIDENCY CEMETERY, BABULBONA, DISTRICT MURSHIDABAD.— Cutting and clearing of jungles and vegetation from the compound and cemetery have been done.

137. HAZARDUARI PALACE, NIZAMATQILA, DISTRICT MURSHIDABAD.— Lime terracing has been done on the roof and also on the floor. Broken glasses of the glazed shutters were replaced. The damaged *burgas* were also replaced by new ones. Lime plastering was done on the outside walls.

138. IMAMBARA, NIZAMATQILA, DISTRICT MURSHIDABAD.— Lime-sand plastering and decorative work on the outside walls of the mounument was done along with the clearance of vegetation from the compound.

139. TOMB OF SHUJA-UDDIN, ROSHNIGANG, DISTRICT MURSHIDABAD.— Deposited silt was cleared from the drain and vegetation was also eradicated from the compound.

140. TOMBS AND MOSQUE OF MURSHID QULI KHAN, SABJIKATRA, DISTRICT MURSHIDABAD.— Brick work on the missing portion of the walls was done along with the renewing of barbed-wire fencing and clearing of vegetation.

141. BALLAL DHIPI, BAMANPUKUR, DISTRICT NADIA.— Brickwork in composite mortar has been done on the walls of the western side for watertightening.

142. EXPOSED STRUCTURE, BANGARH, DISTRICT WEST DINAJPUR.— Debris was cleared from the protected area. Cultural notice board has been fixed. Watertightening work to the top of the brick wall by removing the top two layers and relaying therein 1:3 cement- sand mortar was completed.

143. DARGAH OF SHAH ATA, GANGARAMPUR, DISTRICT WEST DINAJPUR.— Underpinning to the walls of the Dargah in 1:2 *lime-surkhi* mortar has been done along with the relaying of lime concrete after removing the decayed concrete in the proportion of 7:2:2.

CHANDIGARH CIRCLE

Himachal Pradesh

144. LAXMI NARAYAN GROUP OF TEMPLES, CHAMBA, DISTRICT CHAMBA.— The *chattri* of the Gauri Shankar temple was dismantled. The decayed and worn-out wooden members were replaced by new ones.

145. BUDDHIST MONASTERIES, TABO, DISTRICT LAHAUL AND SPITI.— The roof over the Duwang Gumpha, porch and the circumabulatory path around the main shrine, was carefully dis mantled. The overburden of mud was removed, the wooden beams and planks containing paintings dismantled and the decayed beams replaced. The planks containing the paintings were refixed in their original position. The mud roof was relaid after laying an alkathene sheet over the roof and the roof rendered watertight by pouring a mixture of molten bitumen mixed in kerosene oil over the mud roof. Finally the mud roof was plastered with a coat of mud *gobar.*

146. TRILOKINATH TEMPLE, MANDI, DISTRICT MANDI.— The work for the reconstruction of re taining walls of the Trilokinath Temple have been taken up. One wall has been completed whereas work on the second one is in progress (pls. LX-LXI).

Punjab

147. BUDDHIST STUPA, SANGHOL, DISTRICT LUDHIANA.— The area within the stupa has been

levelled and a layer of lime cement concrete provided. Ash remains which were found during excavation of the stupa has been embedded in its original position in a copper container. The drainage of the area has been improved. The work is in progress (pls. LXII-LXIII).

DELHI CIRCLE

Delhi

148. BADARPUR GATE, DELHI.— Dilapidated structure was completely restored as per the original on behalf of the Department of Archaeology, Delhi Administration.

149. CITY WALL, DELHI.— The fortification wall between Kashmiri Gate and Mori Gate was stabilised after underpinning, followed by recessed pointing.

150. KASHMIRI GATE, DELHI.— Area around the monument was given a face-lift by provid ing a grill fencing and iron gate at the entrance, besides watertightening the gate proper. The work is in progress.

151. RANG MAHAL, RED FORT, DELHI.— The work of removing damaged and pulverized terrace concrete was completed and restoration is in progress by replacing decayed and broken wooden beams of the top terrace.

152. ROHSHANARA'S TOMB AND BARADARI, DELHI.— The work of restoration of ornamental troughs including fountains around the monument is in progress.

153. KOTLA FEROZ SHAH, NEW DELHI.— Missing part of the western fortification was restored to the height of extant remains followed by watertightening and pointing. The work is in progress.

154. QUTB MINAR, NEW DELHI.— Damaged circular fluting, below the first balcony, as repaired earlier with *lakhauri* bricks during pre-Independence period, was carefully removed and replaced with red sandstone veneers to match with the original ones. Apart from the above, other decayed and crushed veneer stones were carefully chiselled and scooped out and after strengthening the inner core with cement mortar, new cut veneer stones were fixed in *situ*. The work is in progress.

155. SULTAN GHARI'S TOMB, NEW DELHI.— The work of resetting of dismantled part of the conical dome in centre of western wing was resumed and completed.

156. BAOLI, PURANA QILA, NEW DELHI.— Bulged and out-of-plumb masonry wall was carefully dismantled and restored as per the original and made watertight.

157. CHAUSATH KHAMBA, NEW DELHI.— Improvement to the environment was initiated by

providing paved pathway and green turf around the monument. The work is in progress.

158. HUMAYUN'S TOMB, NEW DELHI.— Remaining and disturbed channels and fountains in the garden were reset and made watertight. The work is in progress.

159. JANTAR MANTAR, NEW DELHI.— Remaining work of providing paved pathway around the *yantras* has been resumed. The work is in progress.

160. KHAN-I-KHANA'S TOMB, NEW DELHI.— Decayed and pulverized terrace floor was dis mantled before relaying of the concrete. The work is in progress.

161. NILA CHATTRI OR SABZ BURJ, NEW DELHI.— The restoration of missing evidences over the dome is being carried out by providing glazed tiles of original colour and texture, besides attending the decayed plaster and stucco mouldings over the ceilings as well as on wall surface. The work is in progress.

GUWAHATI CIRCLE

Assam

162. CACHARI RUINS, KHASPUR, DISTRICT CACHAR.— The cryptogamic growth including moss, lichen, black patches, etc. were removed and cleared from all the monuments and fencing repaired and painted.

163. SHRI SUR'YA PAHAR RUINS, DISTRICT GOALPARA.— The vegetation and wild trees were cleared from the site and moss, lichen, black patches, etc. from the rock cut sculptures were removed. The approach road was widened providing steps and levelling the site.

164. Rock-cut Sculptures, Guwahati, District Kamrup.— The vegetation, moss, lichen, black patches, etc. developed on the rock-cut sculptures known as Vishnujanardan were cleared and removed. The damage caused to the fencing due to landslide was repaired and painted.

165. POA MOCCA, HAJO, DISTRICT KAMRUP.— Vegetation clearance was done and protection notice board fixed.

166. DUARGURILLA ROCK INSCRIPTION, KAMAKSHAYA HILL, DISTRICT KAMRUP.— The moss, lichen, black patches grown on the inscription were removed. The wild vegetation of the compound was cleared and the fencing painted.

167. ROCK-CUT FIGURES, KAMAKSHAYA HILL, DISTRICT KAMRUP.— The vegetation and wild trees were removed from the site and fencing repaired and painted.

168. CACHARI GROUP OF MONUMENTS, MAIBONG, DISTRICT NORTH CACHAR HILLS.— The vegetation all around the sites was cleared and protection notice board fixed.

169. GROUP OF FOUR MAIDUMS, CHARAIDEO, DISTRICT SIBSAGAR.— The Maidums were cleared by cutting jungles, wild trees and herbs and shrubs all around.

170. AHOM RAJA'S PALACE, GURGAON, DISTRICT SIBSAGAR.— Renewal of terracing of the roof, filleting of broken edges, filling up of cracks, re-fixing of missing bricks of damaged pillars, sealing of joints, plastering of wall and repairing of flooring with *lime-surkhi* mortar were undertaken in this monument. The approach road to the monument was partly levelled and the fencing including cattle-proof gate was repaired and painted.

171. SIBDOL, DISTRICT SIBSAGAR.— Renewal of plastering of the wall of the *mukhamandapa* and gateway was done. The cracks developed and damage caused to the *sikhara* of the main temple were mended with composite mortar and brick by uprooting the trees. Niches and ornamental pillars of the gateway were reproduced with necessary brickwork. Lime concreting to the roof of the *mukhamandapa* has also been done.

172. GROUP OF MONUMENTS, SIBSAGAR, DISTRICT SIBSAGAR.— Vegetation, moss, lichen, etc., grown on all the monuments at Sibsagar, Joysagar and Gaurisagar were cleared and necessary repairing works i.e. plastering, flooring, edging, pointing, underpinning, fixing of doors, repairing of fencing and painting were done.

173. BAMUNI AND SINGRI HILLS, TEZPUR, DISTRICT SONITPUR.— Vegetation, wild trees, etc., were cleared and removed from the site.

174. DAH PARVATIYA, TEZPUR, DISTRICT SONITPUR.— Vegetation clearance, trimming of trees, levelling of the site, repairing of fencing and painting were done.

175. BORDOL, VISHWANATHGHAT, DISTRICT SONITPUR.— The cryptogamic growth on the monument was cleared.

Manipur

176. VISHNU TEMPLE, DISTRICT BISHENPUR.— The cryptogamic growth from the temple was completely cleared and removed and door repaired.

Nagaland

177. REMAINS OF FORT, DIMAPUR, DISTRICT KOHIMA.— The cryptogamic growth, moss, lichen, black patches, etc. from the gateway and the monoliths were removed including cleaning of the wild trees from the site.

178. SOCHIMA AND KHANOMA, DISTRICT KOHIMA.— The vegetation all around the sites was cleared and removed.

Tripura

179. UNAKOTI, KAILASAHAR, DISTRICT NORTH TRIPURA.— The vegetation and wild trees were cleared from the site and the moss, lichen, black patches, etc. grown on the rock-cut sculpture were removed. Temporary shed for loose sculptures was provided and repairing of brick steps was done.

180. BHUVANESVARI TEMPLE, UDAIPUR, DISTRICT SOUTH TRIPURA.— The vegetation, moss, lichen, black patches, etc. from the monument were cleared and removed. Cultural notice board was fixed and door has been provided and painted.

181. CHATUARDASADEVATA TEMPLE, UDAIPUR, DISTRICT SOUTH TRIPURA.— The vegetation, moss, lichen, etc. grown on the monument were cleared and removed and cultural notice board was fixed. Underpinning, patch plastering and filling up of cracks were also done.

182. GUNAVATI GROUP OF MONUMENTS, UDAIPUR, DISTRICT SOUTH TRIPURA.— Vegetation, moss, lichen, etc. from all the monuments were cleared and removed. The doors were repaired and the cultural notice board was fixed.

HYDERABAD CIRCLE

Andhra Pradesh

183. VIRABHADRASVAMI TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.— The repair to the fallen portion on the northern side of the inner *prakara* wall was completed with dressed granite stone slabs matching with the existing original ones. Of the same inner *prakara* wall, repair to the south-eastern corner breach is in progress. The core of the wall is filled with brick masonry using combination mortar. Copper dowels have been fixed at appropriate places to provide additional strength to the structure.

184. LOWER FORT AND MAHALS, CHANDRAGIRI, DISTRICT CHITTOOR.— The damaged balconies and stone *chajjas* on the western side of the Raja Mahal were restored as per the original. The stucco work on the eastern side of Rani mahal was cleaned with pure water. Thereafter, the damaged portions of the stucco pieces were mended, filleted and restored as per the available original clues and were thus brought to the original shape and shade.

The disturbed wall portions of Chennakesavasvami temple on the western, eastern and southern sides, represented by the *garbhalaya* and the *ardhamandapa,* were carefully removed and then re-set to plumb and original alignment. The repairs to the *sikhara* of the temple containing stucco work is also being attended.

185. SOWMYANATHASVAMI TEMPLE, NANDALUR, DISTRICT CUDDAPAH.— Of the eastern *prakara* wall, the missing veneer stones on the northern and southern sides of the eastern entrance were restored with specially quarried stones of identical texture and specification as per the ancient alignment. The core was filled with brick masonry using combination mortar.

186. KODANDARAMASVAMI TEMPLE, VONTIMETTA, DISTRICT CUDDAPAH.— The restoration of damaged and missing pilasters, moulding, cornices, *panjaras, kudus* and *toranas* (vaulted roof) of the northern *gopura* of the fourth *tala* was done in masonry with specially manufactured bricks of similar specifications and texture in combination mortar as per the available ancient features. Similarly, the resetting of loose and damaged surfaces of vaulted roof of the southern *gopura* was also done in brick masonry in combination mortar. The off-sets, pilasters, niches, *panjaras* and *kudus* of the *gopura* were also identically restored.

187. BHIMESVARASVAMI TEMPLE, DRAKSHARAMA, DISTRICT EAST GODAVARI.— Careful stripping off of the thick encrustations of lime coating over the surface of the carved stone pillars, capitals, lintels, roof-slabs and walls was done which exposed to view several sculptured panels and inscriptions.

Of the main temple, repairs to the roof of the various sub-shrines like Subramanyasvami, Virupaksha, Vatukabhairava, Virabhadrasvami and *nandimandapa* were completed. For this, the pulverized roof concrete on the top of the ceiling slabs of the above mentioned sub-shrines was carefully removed and relaid in brick jelly lime concrete.

188. KUMARA RAMA BHIMESVARASVAMY TEMPLE, SAMALKOTA, DISTRICT EAST GODAVARI.— Water-tightening of the roof of the main temple was carried out by removing the brick jelly concrete to a thickness of 0.55m and by relaying new brick jelly concrete to a thickness of 0.15m which was overlaid with two courses of flat tiles, the joints of which were comprehensively plugged. Besides this, thick layers of lime coatings on the *adhishthana* of Tiruchuttumala was carefully stripped off without causing any damage to the ancient carved stones.

189. FORT, GOLCONDA, DISTRICT HYDERABAD.— The dilapidated mosque in Nagina Bagh was extensively repaired by way of water-tightening the open terrace, grouting wide cracks, arresting leakage and seepage of water along the walls, patch plastering in lime mortar and chemical cleaning of the inner surface. Apart from this, the inner fort-wall flanking Nagina Bagh was repaired by way of pointing the stonework and reconstructing the damaged battlements. The flooring of the arcaded cellars skirting Nagina Bagh was cleared off debris to a depth of 1 to 1.50m up to the original floor-level, which was reconditioned by providing stone pitching.

190. BUDDHIST REMAINS, GUDIVADA, DISTRICT KRISHNA.— With a view to protect the Buddhist stupa and archaeological site from unauthorised encroachments and misuse by the public, iron grill fencing was provided.

191. UMA-MAHESVARASVAMY TEMPLE, YAGANTI, DISTRICT KURNOOL.— The broken beam of main gali *gopura* of the temple was repaired by providing and inserting M.S. angle iron frame. The dislocated taki stone steps leading to the main-temple were carefully removed and reset in the same style duly pointing the joints with combination lime mortar. The damaged flooring of taki stone slabs around Pushkarani tank were removed and relaid with new slabs of the same size, colour and texture. Repairs for the existing drain for proper outlet of water from the Pushkarani were carried out. The steep steps leading to the Venkatesvara cave were provided with G.I. pipe railing. The dislocated taki stone steps and fallen portion of the retaining wall at Ragandla cave have been restored.

192. RECONSTRUCTION OF PAPANASI GROUP OF TEMPLES, ALAMPUR, DISTRICT MAHABUBNAGAR.— In the course of transplantation of 23 ancient temples, first of all the main temple "F", locally known as Papanasheswara, was reconstructed. Its reconstruction included in the beginning the marking of the central line as well as the digging of the foundation. Cement concrete was laid over the hard rock and in order to give grip and to avoid jerkings to the temple structure 20 x 20mm stainless steel rods of 10mm to 15mm length were inserted in the hard rock by way of drilling. The temple plinth was raised in cement mortar using the original stone slabs. Copper clamps and dowels were fixed in liquid lead on either end of each stone slab in alternate courses of the structure.

The pillar bases were also brought to the height of the basement level. The reconstruction of the plinth and superstructure was done in cut stones using original temple stones. The hearting too was filled with the original stones. Sporadic voids in the hearting, however, were filled with cement concrete. The earlier broken architectural members like door-lintel, roof-slabs and pillars were re-used by mending them with stainless steel rods and araldite.

193. THOUSAND PILLARED TEMPLE, HANAMKONDA, DISTRICT WARANGAL.— The foundation and the *adhishthana* of the Rudresvara shrine of the Trikutalaya temple complex was strengthened by way of underpinning with stone masonry. The missing *pradakshina-patha* stone slabs of the *adhishthana* platform were reset with new moulded and carved stone-slabs matching with the original ones.

194. RAMAPPA TEMPLE, PALAMPET, DISTRICT WARANGAL.— After thorough documentation, the dismantling of the dilapidated *nandi-mandapa* was accomplished with the help of Lorane Crane. The sprawling archaeological area around Ramappa temple complex was provided with barbed wire fencing on the eastern, western and northern sides, with a view to prevent encroachments.

195. LINGA-PITHA PLATFORM OF SVAYMBHU COMPLEX, WARANGAL FORT, DISTRICT WARANGAL.— Exposing the concealed basement moulding of *linga-pitha* complex on the southern side and strengthening its foundation by introducing random rubble boulder with sand was carried out. The *lingas* and other architectural members were exposed to view after the removal of the accumulated debris

JAIPUR CIRCLE

Rajasthan

196. ANASAGAR BARADARI, AJMER, DISTRICT AJMER.— The work of restoration of three fallen arched gate was taken up.

197. RAKHANA-KI-DEORI, NEELKANTH, DISTRICT ALWAR.— The dislodged *jagati* of the temple was dismantled and reset. Half apron around the temple was also exposed. The work is in progress.

198. FORT, BHARATPUR, DISTRICT BHARATPUR.— The work of underpinning and pointing of fort wall was continued.

199. MOAT WALL, BHARATPUR, DISTRICT BHARATPUR.— The work of reconstruction of missing parts of moat wall and repairs to existing portions, entrusted to P.W.D., Government of Rajasthan was continued.

200. HINDOLA, DIG, DISTRICT BHARATPUR.— Missing balustrade *jali* matching with the original stone work was provided to the Hindola in front of Gopal Bhavan.

201. DIG PALACES, DIG, DISTRICT BHARATPUR.— The protected area adjoining the Dig palaces was enclosed by barbed wire fencing.

202. CHAURASI KHAMBHA, KAMA, DISTRICT BHARATPUR.— Preparation of new stones as per original for replacing missing stone brackets and lintels was done.

203. SAVAN AND BHADON PAVILIONS, DIG, DISTRICT BHARATPUR.— Repairs were done to the ornamental *jali* of the railing of the stairs leading down to the basement.

204. FORT, CHITTAURGARH, DISTRICT CHITTAURGARH.— The fallen portions of fortification wall were restored as per original.

205. EXCAVATED SITE, RANG MAHAL, DISTRICT GANGANAGAR.— The fencing work was attended to and completed.

206. FORT, JAISALMER, DISTRICT JAISALMER.— The work of resetting the cracked and bulged bastion of upper fortification wall was attended to. The work is being continued. Further the undulated pathway from Nichi Pole to Suraj Pole was dismantled and reset in lime cement mortar by giving necessary slope. The open drain running along the pathway was converted into a covered one by laying underground pipes.

207. PATAWON KI HAVELI, JAISALMER, DISTRICT JAISALMER.— On the request of Government of Rajasthan, the Jaipur Circle of the Survey undertook the work of repairs to this building. Stone

flooring was provided to the open courtyard and at the entrance. As a first phase of major repairs, gold painted ceilings which were about to collapse, were supported by struta and shuttering.

208. ANCIENT STRUCTURAL REMAINS, KRISHNAVILAS, DISTRICT KOTA.— The protected area was fenced.

209. HAMMIR'S BARI KUTCHEHRI, RANTHAMBHOR, DISTRICT SAWAI MADHOPUR.—The bulged stones of the outer wall were taken out and reset to plumb.

210. HAMMIR'S PALACE, RANTHAMBHOR, DISTRICT SAWAI MADHOPUR.— Concealed steel girders were provided to the broken stone beams. The outer surface of the stone beams was finished to give an old effect matching with the original. The work is in progress.

211. FORT, RANTHAMBHOR, DISTRICT SAWAI MADHOPUR.— Missing portion of the inner fortification wall near Padam Talav was restored.

LUCKNOW CIRCLE

Uttar Pradesh

212. KHUSRU BAGH, ALLAHABAD, DISTRICT ALLAHABAD.— The collapsed eastern portion of the enclosure wall of Khusru Bagh has been restored with rubble stone masonry alongwith coping and duly pointed. The work is in progress.

213. TANK B, SRINGAVERAPURA, DISTRICT ALLAHABAD.— In the Tank B the top brick courses were taken out, reset and duly pointed. Concrete shell was provided underneath the walls. The work is in progress. The excavated remains including the sections were, covered with alkathene to save them from rains.

214. ASAF-UD-DAULA'S IMAMBARA, LUCKNOW, DISTRICT LUCKNOW.— In the forecourt on the east of the entrance gate comprehensive repairs were taken up which included lime cement plaster, thick plaster mouldings and ornamental designs, carvings, floral work within and without panels, cusped arches, piers, pilasters, *chhajjas,* northern and southern facades, series of domes including restoration of bases of the pinnacles. In the north-eastern *burji* the octagonal base having petals in *dasa* and rich moulded designs have been restored. In the adjoining octagonal *burji* the western facade having geometrical designs has been restored to a height of 20m. In the eastern gateway the western facade has been completely restored upto the top of the second floor and parapet including restoration of miniature domes and arched parapet with moulded piers and cornices. In the northern facade of the gateway mouldings and carvings have been attended to. Below front floor *chhajja,* richly moulded, carved and floral works have been

attended to on the roof of the balcony and south-eastern pier. The parapet on the south side of the gateway has been completely restored upto a length of 20m which includes the miniature domes. The eastern and part of southern facade of the forecourt has also been attended to including restoration of richly moulded work in parapet, cornices and arched entrance. The roof terrace of the south-eastern wing has been reconcreted to watertighten it. The *lakhauri* brick steps leading to second floor terrace of the gateway has been restored in eastern portion. The circular road of the forecourt has been brick-paved matching with original design after excavating upto 30cm in depth, levelling and laying lime concrete over stone soling. The work is in progress.

In the first court of the Imambara, the dead concrete on the roof terrace of the second floor of either side wings of the second gateway has been replaced with fresh lime concrete mixed with water proofing compounds, after removing dead and decayed layers and thoroughly cleaning the surface and filling cracks. The work is in progress.

The verandah on the north-west connected with the Imambara proper was taken up for conservation work. The richly moulded, carved and ornamental work in pillars, piers, and towers on the eastern and western faces has been done. The work is in progress. In the *baoli* the work in the central portion was taken up. The work is in progress.

215. NADAN MAHAL TOMBS, LUCKNOW, DISTRICT LUCKNOW.— The brick masonry boundary wall of Nadan Mahal complex which has been raised by 2.20m in height on the north-east, south east and the south-west to check the trespassers from the adjoining localities was plastered. The work is in progress.

216. RESIDENCY, LUCKNOW, DISTRICT LUCKNOW.— The work in the underground chambers in the Model Room was taken up. After excavating the floors upto the original level they have been relaid in lime cement concrete. The work on walls and ceiling is in progress.

The fallen and damaged portions of the boundary wall of the Residency have been reconstructed at various points in brick masonry. The work is in progress.

217. SIKANDAR BAGH BUILDINGS, LUCKNOW, DISTRICT LUCKNOW.— The richly moulded plaster work including plain plaster work and underpinning *lakhauri* brick masonry was taken up on eastern and western sides of the gateway. The construction of the compound wall has also been taken up. Both the works are in progress.

MADRAS CIRCLE

Kerala

218. MATTANCHERRY PALACE, COCHIN, DISTRICT ERNAKULAM.— The exterior surface of the wall of the palace was coated with Snowcem paint of a suitable colour (ivory white) after scraping the old one.

219. ST. FRANCIS CHURCH, COCHIN, DISTRICT ERNAKULAM.— The decayed lime plaster was removed and replastered in combination mortar. The interior was provided with a coat of painting matching with the original. Similarly the doors and windows were painted.

Tamil Nadu

220. JVARAHARESVARA TEMPLE, KANCHIPURAM, DISTRICT CHINGLEPUT.— The leaky terrace of the *mahamandapa* was watertightened by laying two courses of flat tiles in brick jelly concrete and finally in combination mortar.

221. MONUMENTS, KANCHIPURAM, DISTRICT CHINGLEPUT.— The work of gravelling the pathways and vegetational clearance were attended to at Jvaraharesvara, Kailasanatha, Vaikunthape-rumal, Matangesvara, Muktesvara and Piravatanesvara temples.

222. MONUMENTS, MAMALLAPURAM, DISTRICT CHINGLEPUT.— Removal of accumulated sand and paving of gravel pathways was also done at Arjuna's penance, Shore temple, Varaha ant Mahishamardini caves, Kottikal and Panchpandava *mandapas.*

223. SHORE TEMPLE, MAMALLAPURAM, DISTRICT CHINGLEPUT.— The protected area around the monument was fenced with R.C.C. posts and barbed wire to prevent unauthorised encroach ment.

224. DHARMESVARA TEMPLE, MANIMANGALAM, DISTRICT CHINGLEPUT.— The leaky terrace of the temple was watertightened after laying brick jelly concrete and flat tiles. The fallen portion of the enclosure wall was reconstructed as per the original.

225. APATSAHAYESVARA TEMPLE, TENNERI, DISTRICT CHINGLEPUT.— The damaged terrace was replastered and watertightened after laying a fresh brick jelly concrete and flat tiles.

226. VENKATESAPERUMAL TEMPLE, TIRUMUKKUDAL, DISTRICT CHINGLEPUT.— The damaged sub-shrines of Andal and Karimanikkaperumal (pls. LXIV-LXV) were reconstructed as per the original after providing suitable foundation. The floorings of *kalyana-* and *ardha-mandapas* and the shrines of Anjaneya, Karimanikkaperumal and Andal were paved with stone slabs. The accretionary brick wall in the *mukha-mandapa* was removed and replaced with an iron grill. The buried temple plinth was exposed during levelling operations.

227. NITYAKALYANASVAMI TEMPLE, TIRUVIDANTHAI, DISTRICT CHINGLEPUT.— The weathered courses of the roof of the mainshrine including that of Andal and Thayar were removed and water-tightened after laying two courses of flat tiles in brick jelly concrete. The *vimanas* over the shrines of Andal, Thayar, Ranganatha, Ranganayaki and the main shrine were also water-tightened after suitably mending and strengthening the stuccos. The work of dismantling the

withered courses of the roofs of Adyapaka *mandapa,* 16 pillared *mandapa, vahana mandapa* is in progress. The accretionary lime wash over the surface of the walls were removed in certain areas and the inscriptions were exposed.

228. CLIVE BUILDING, FORT ST. GEORGE, DISTRICT MADRAS.— The roof of the building was watertightened after removing the dead mortar. The damaged doors and windows were repaired and fallen wooden sun shades were replaced with new ones as per the original. The plaster over the walls wherever damaged due to saline action was replastered.

229. FORT WALL, FORT ST. GEORGE, DISTRICT MADRAS.- The fallen portions of the fort wall at the north eastern side were rebuilt and plastered.

230. ST. MARY'S CHURCH, FORT ST. GEORGE, DISTRICT MADRAS.— The damaged plaster over the inner wall surface was removed completely and plastered and polished to match with the original. The ceiling of the vaulted roof was painted.

231. RANGANATHASVAMI TEMPLE, ERUKKAMPATTU, DISTRICT NORTH ARCOT.— Reconstruction of the *tirumadil* after filling the core between the stone veneers was completed. The *mahamandapa* terrace was watertightened after laying two layers of flat tiles in cement mortar over brick jelly concrete and plastered at the top with special hand grind mortar suitably tinted. The fallen portion of the *vimana* and *mandapa* were reconstructed as per the original. Reconstruction of the compound wall and the retaining wall to prevent seepage of water and erosion of earth were completed.

232. SOMANATHA TEMPLE, MELPADI, DISTRICT NORTH ARCOT.— The withered courses of the leaky roof of the *mahamandapa* and the out-of-plumb walls were dismantled after proper documentation. Reconstruction of the out-of-plumb walls after providing foundation in cement concrete and dismantling and refixing of pillars are in progress. The sunken roof and pillars in the north-western corner of the inner *prakara* were removed and re-erected after providing a strong foundation and finally watertightened.

233. JALAKANTHESVARA TEMPLE, VELLORE, DISTRICT NORTH ARCOT.— The damaged portions of the main *gopura* were mended and strengthened with the help of small bricks and tiles; likewise the broken stucco figures were also mended. The *gopura* was treated with a thin coat of specially prepared handgrind lime mortar suitably tinted to match with the original.

234. SIKHANATHASVAMI TEMPLE, KUDIMIYAMALAI, DISTRICT PUDUKKOTTAI.— The fallen and Out-of-plumb *prakara* wall on the eastern side was dismantled and reconstructed as per the original. The broken ceiling slabs in the Hundred-pillared *mandapa* have been replaced with new ones and the terrace over the central bay has been watertightened. The work of restoring the fallen *kalyanamandapa* including strengthening the foundation is in progress.

235. RAJENDRACHOLISVARA TEMPLE, PONNAMARAVATHI, DISTRICT PUDUKKOTTAI.— The work of watertightening the cloistered *mandapa* terrace after dismantling the old ones is in progress.

236. NARASIMHASVAMI TEMPLE, NAMAKKAL, DISTRICT SALEM.— The accretionary lime wash over the outer walls of the Amman shrine was scraped to expose the original features. The *mahamandapa* doors were painted and the *prakara* wall was provided with a gate.

237. RANGANATHASVAMI TEMPLE, NAMAKKAL, DISTRICT SALEM.— The accretionary lime over the outer wall surface of the Amman shrine was removed to expose the original features and the wooden doors were painted.

238. FORT WALL, GINGEE, DISTRICT SOUTH ARCOT.— The fallen portion of the fort wall near Rajagiri fort entrance and Vellore gate have been reconstructed with the available stones as per the original. The out-of-plumb wall has been dismantled and reconstructed to match with the original.

239. VENKATARAMANA TEMPLE, GINGEE, DISTRICT SOUTH ARCOT.— The damaged leaky terrace of the pillared *mandapa* is being watertightened. The main *vimana* has been cleaned off moss and lichen and the damaged portions have been repaired.

240. AIRAVATESVARA TEMPLE, DARASURAM, DISTRICT THANJAVUR.— The south-eastern cloistered *mandapa* and the tirumadil were carefully dismantled and reconstructed as per original. Floor stones inside the *mandapa* and brick coping over the tirumadil were also provided. The cloistered *mandapa* on the western side including the two subshrines was also dismantled and reconstructed from the foundation level upto the erection of pillars. The work of relaying the ceiling slabs is in progress.

241. DEVANAYAKI AMMAN TEMPLE, DARASURAM, DISTRICT THANJAVUR.— Paving of roughly dressed stones over lime concrete and pointing around the main temple was completed.

242. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.— The front *mandapa* of Subrahmanya shrine, *vahana mandapa* inside the main shrine and open area inside the madapalli were provided with grilled screens to safeguard the antiquities preserved in the temple.

243. VALISVARA TEMPLE, TIRUVALISVARAM, DISTRICT TIRUNELVELI.— The broken granite beams of the Amman shrine were replaced with new ones as per the original. The undulated stone blocks of the small chamber inside the *mahamandapa* were reset and the joints were pointed. The leaky *vimana* of the main temple, Amman and the other sub-shrines were watertightened with a thin coat of hand grind mortar after mending and strenghtening the stuccos. Dismantling and water-tightening the leaky terrace of the Amman shrine is in progress.

PATNA CIRCLE

Bihar

244. ANCIENT SITE, ANTICHAK, DISTRICT BHAGALPUR.— Special size bricks were manufactured for brick work in the robbed portion of the structural repairs with *me-surkhi* mortar.

245. ROCK-CUT SCULPTURES, PATHARGHATA, DISTRICT BHAGALPUR.— Pipe railing were provided to steps in between first and second terrace for the safety of the visitors.

246. EXCAVATED REMAINS, NALANDA, DISTRICT NALANDA.— Underpinning, watertightening and repairing of the structures was done.

247. OLD RAJGRIHA, RAJGIR, DISTRICT NALANDA.— The work of barbed-wire fencing around the acquired land was done near Virayatana.

248. BUDDHIST STUPA, KOLHUA, DISTRICT VAISALI.— Structural repairs with *Mme-surkhi* mortar were done.

Uttar Pradesh

249. EXCAVATED REMAINS, KUSHINAGAR, DISTRICT DEORIA.— Water proofing cement concrete layer and stainless steel sheet were provided under the pedestal of reclining Buddha.

250. TOMB OF GHULAM RASUL KHAN, JAUNPUR, DISTRICT JAUNPUR.— The resetting and pointing work with *Mme-surkhi* were done.

251. CHARAUNGULI MOSQUE, JAUNPUR, DISTRICT JAUNPUR.— The resetting and pointing work with *Mme-surkhi* were done.

252. OLD FORT, JAUNPUR, DISTRICT JAUNPUR.— The restoration of collapsed fort wall was done.

SRINAGAR CIRCLE

Jammu and Kashmir

253. SUN TEMPLE, MARTAND, DISTRICT ANANTNAG.— The flooring of the main entrance was laid, besides carrying out repairs to the steps.

254. DATHA MANDIR, BANDI, DISTRICT BARAMULLA.— Watertightening and pointing of the temple was done to stop percolation of water. Besides miniature shrines were also repaired.

255. SIVA TEMPLE, BUNIYAR, DISTRICT BARAMULLA.— For the proper watch and ward and maintenance of the temple a hut for chowkidar was provided.

256. SIVA TEMPLE, FATEHGARH, DISTRICT BARAMULLA.— To know the nature and the extent of the temple complex, buried structures were exposed. The work is in progress.

257. GAURI-ISHWARA TEMPLE, PATTAN, DISTRICT BARAMULLA.— For better upkeep of the temple, a shed for chowkidar was provided and the damaged fencing was repaired.

258. SUGANDESHA TEMPLE, PATTAN, DISTRICT BARAMULLA.— For better watch and ward of the temple, a shed for chowkidar was provided.

259. PRATAPASVAMI TEMPLE, TAPAR, DISTRICT BARAMULLA.— Iron grilled gate to the fenced area of the temple was provided.

260. ANCIENT STUPA, TISERRU, DISTRICT LEH (LADAKH).— The accumulated debris from the top of the first and second circular terraces was removed and the damaged portion was repaired (pl. LXVI).

261. AVANTISVAMI TEMPLE, AVANTIPUR, DISTRICT PULWAMA.— Repairs to the cells of the peristyle was carried out and the flooring in some of the cells was laid. A shed for chowkidar for better watch and ward of the temple-complex was also provided.

262. AVANTISVARA TEMPLE, AVANTIPUR, DISTRICT PULWAMA.— For better watch and ward of the temple a shed for chowkidar was provided.

263. ANCIENT SITE, BURZAHOM, DISTRICT SRINAGAR.— The excavated circular dwelling pits were provided with G.I. sheets to protect them from rain and snow.

264. BADSHAH TOMB, SRINAGAR, DISTRICT SRINAGAR.— The southern wall of the tomb complex was repaired.

265. PARI-MAHAL, SRINAGAR, DISTRICT SRINAGAR.— The restoration work of the arches and walls of the Baradari at terrace 1 was completed.

266. NARANAG GROUP OF TEMPLES, WANGATH, DISTRICT SRINAGAR.— The dislodged and out-of-plumb portions of the main temple were dismantled and partly reset after strengthening the foundation. The work is in progress.

267. DERA TEMPLE, BABORE, DISTRICT UDHAMPUR.— The *navagraha* panel which was in a dilapidated condition was restored and new stone beam was provided. The stone flooring in and around the temple was also provided.

268. KALA DERA I, BABORE, DISTRICT UDHAMPUR.— Dislodged portions of the main shrine and *mandapa* walls were dismantled and reset. Accumulated earth around the temple was removed and the open area was fenced.

269. KALA DERA II, BABORE, DISTRICT UDHAMPUR.— Missing portion of the *mandapa* wall was restored as per original.

270. NAND BABORE, BABORE, DISTRICT UDHAMPUR.— The temple was thickly covered with vegetation and was in a very bad shape. The major portion of the temple was dismantled and reset. An apron to the temple was also provided. The work is in progress.

271. TEMPLE 1 AND 4, KIRAMCHI, DISTRICT UDHAMPUR.— Steps leading to temple 1 and the exterior flooring were reset after dismantling (pl. LXVII). The pebble wall in the rear side of the temple 4 was dismantled and a masonry wall was built to strengthen the plinth of the temple.

272. TEMPLE 5, KIRAMCHI, DISTRICT UDHAMPUR.— Dislodged portion of the temple was reset and weathered portions of the plain and ornamental stone courses were replaced as per original. The main entrance on the eastern side which had been extensively damaged was restored as per original. The work is in progress.

273. DEVI BHAGAVATI TEMPLE, MANWAL, DISTRICT UDHAMPUR.— A new stone flooring inside the temple was laid and the dislodged pillars were reset in their *in situ* position. The damaged ashlar masonry work of the well attached to the temple was also attended to and a facelift was given to the monument.

274. FORT, RAMNAGAR, DISTRICT UDHAMPUR.— Accumulated debris from the fort was cleared to expose the original plan of the fort. Inside the fort iron grills were provided to cover the ancient wells. Roofs were laid on the entrance chamber of the fort.

275. NAWA MAHAL, RAMNAGAR, DISTRICT UDHAMPUR.— Wooden roof on the side chambers of the main entrance and in the rectangular hall was provided. Missing portion of the walls in the north-western corner of the palace was also restored. Besides, repairs to the chamber on the north were also carried out (pl. LXVIII).

276. PURANA MAHAL, RAMNAGAR, DISTRICT UDHAMPUR.— Damaged *chajjas* on the outer walls of the old palace were repaired. New roof in the entrance chamber was provided as per the original and weathered fluted pillars were repaired. Besides, broken door sills and damaged staircase were also repaired in the upper storey of the complex.

277. SAMADHI, RAMNAGAR, DISTRICT UDHAMPUR.— Repairs to the *chajja* and roof of the side chambers were carried out.

278. SHEESH MAHAL, RAMNAGAR, DISTRICT UDHAMPUR.— Side walls of the main entrance of the Sheesh Mahal were repaired and the mouldings which had peeled off were restored as per original. Besides roof of the chambers of the Sheesh Mahal and bulged and out-of-plumb walls of the courtyard were also repaired.

VADODARA CIRCLE *Goa,*

Daman and Diu

279. Church, Moti Daman, District Daman.— Western and southern portions of the Church which were covered with fallen debris were exposed. During the course of clearance, pottery, painted Celadon ware and terracotta objects were found. The exposed walls have been underpinned and watertightened.

280. MOAT OF FORT WALLS, MOTI DAMAN, DISTRICT DAMAN.— The fort walls have been cleared of growth of vegetation, small trees, etc., and underpinned with rubble stone masonry. The walls have also been plastered matching with the original.

281. FORT, DIU, DISTRICT DIU.— The collapsed bridge connecting two portions of the fort has been restored. Missing and damaged portions of jetty's flooring was provided (pi. LXIX).

Gujarat

282. BABA LAULI'S MOSQUE, AHMEDABAD, DISTRICT AHMEDABAD.— In continuation of the last year's work *(1984-85,* p.257) stone flooring over a bed of concrete in front of the mosque has been completed. Stone *jalis* in the western wall windows have been provided with original designs of dressing.

283. BHADRA GATE AND TOWER, AHMEDABAD, DISTRICT AHMEDABAD.--- The dead plaster was removed from the walls and fresh plaster work was done. The worn-out BB masonry was replaced. The G.I. pipe line which had worn-out has also been replaced.

284. DADA HARI'S MOSQUE AND VAV, AHMEDABAD, DISTRICT AHMEDABAD.— The portions of com pound wall which had fallen down and which were likely to fall down were restored. The work of plastering of the walls was also taken up.

285. JAMI MASJID, AHMEDABAD, DISTRICT AHMEDABAD.- The worn-out pillar bases have been replaced. The worn-out masonry of walls in the mosque and lobbies has been removed and new stone masonry has been done. Portions of lobby walls on northern side which had sunk were dismantled and restored to their original level.

286. TOMB OF AHMED KHATTU GANJ BAKSH, SARKHEJ, DISTRICT AHMEDABAD.— The *kanguras* which were missing have been provided partly. The work is in progress.

287. ANCIENT SITE, LOTHAL, DISTRICT AHMEDABAD.— The work of fencing the area to stop damage to the structure by stray cattle has been completed. The water from the dock was pumped out to help in desilting. The work of plastering and mud colour wash to the warehouse was carried out. The wornout bricks were removed and fresh bricks were provided. The beadmaker's kiln damaged due to cyclone, was restored as per original.

288. JAMi MASJID, BHARUCH, DISTRICT BHARUCH.— Damaged *chhajja* stones have been re placed. The damaged flooring stones were removed and new ones were provided. Dressing work of lintels and capitals is in progress.

289. NORTHERN PORCH OF DWARAKADHISHA TEMPLE, DWARKA, DISTRICT JAMNAGAR.— In continuation of the work of last year *(1984-85,* p.257) the work of construction of pillars, capitals, etc., has been completed with newly-carved stones, after removal of the weathered and broken ones.

290. GALTESHWAR MAHADEV TEMPLE, SARNAL, DISTRICT KHEDA.— To ward-off any encroachment in the archaeological area, the work of wire fencing was started. The work is in progress.

291. SUN TEMPLE, MODHERA, DISTRICT MAHESANA.— The portions from where the barbed wire had washed away due to erosion were replaced by new barbed wire. The *nritya-mandapa* is to be provided with new stone *chhajjas* in place of fallen down *chhajja* stones. The work is in progress. Further the bulged ashlar stone masonry was dismantled and reset. The missing stone masonry of the *torana* was provided with newly dressed and carved stones as per the original mouldings.

292. SURYA KUND, MODHERA, DISTRICT MAHESANA.— The sunken ashlar stone masonry was dismantled. For restoration and reconstruction work, the desilting work has been taken up.

293. RANI-KI-VAV, PATAN, DISTRICT MAHESANA.— The work of exposing the hidden structure was continued. The ashlar masonry of the side wall which was out-of-plumb has been dis mantled and reset in proper position. Desilting work is in progress.

294. SHAIKH FARID TOMB, PATAN, DISTRICT MAHESANA.— Clearing of portions of the fallen wall was taken up. The work is in progress.

295. CITADEL WALL, PAVAGARH, DISTRICT PANCHMAHALS.— The portions of bastions and wall have been restored with ashlar stone masonry as per original pattern.

296. JAMI MASJID, PAVAGARH, DISTRICT PANCHMAHALS.— The pillars of three portions of corridors which had fallen down were replaced.

297. KEVDA MASJID, PAVAGARH, DISTRICT PANCHMAHALS.— The barbed wire fencing work has been carried out throughout the entire archaeological area so as to facilitate horticultural operations.

298. NAGINA MASJID, PAVAGARH, DISTRICT PANCHMAHALS.— The archaeological area has been fenced with wire to facilitate horticultural works.

299. GROUP OF TEMPLES, KHED RODA, DISTRICT SABARKANTHA.— The work of providing missing ashlar stone masonry was taken up. The work is in progress.

300. OLD ARMENIAN TOMBS, SURAT, DISTRICT SURAT.— Retaining wall which had washed out on southern side has been restored and a compound wall on the eastern side was also constructed to prevent misuse of the archaeological area. Necessary earth filling has also been done.

301. OLD DUTCH TOMBS, SURAT, DISTRICT SURAT.— The dead lime plaster was removed from the walls, pillars, ceiling, etc., and fresh lime cement mortar plaster was done. Floral designs and motifs have been reconstructed as per original patterns and colours. The cracks in the domes were grouted after thorough washing of the cracks to make them watertight. The missing pinnacle was rebuilt as per original.

302. HAZIRA, VADODARA, DISTRICT VADODARA.— To prevent any damage to foundations of the tomb, stone flooring was laid on bed concrete.

303. HIRA GATE, DABHOI, DISTRICT VADODARA.— To prevent encroachment of archaeological area an enclosure has been constructed which will also prevent misuse of the area by nearby residents.

MONUMENTS MAINTAINED BY THE STATES

ANDHRA PRADESH

1. MONUMENTS IN DISTRICTS ADILABAD, KRISHNA AND MAHBUBNAGAR.— Repairs were carried out to several monuments by way of removal of rank vegetation, clearance of debris, and also reconstruction of walls etc., at places like Utnoor fort in District Adilabad, Kondapalli fort in District Krishna and Chennakesava Swamy temple at Gangapur in District Mahbubnagar.

2. MONUMENTS IN DISTRICTS KARIMNAGAR AND PRAKASHAM.— Exposed brick temples belonging to Vishnukundin period were conserved at Keesarguttah. Similarly the brick built Buddhist stupa at Chandavaram in district Prakasam and Dhulikatta in district Karimnagar were also partly conserved.

3. MONUMENTS IN DISTRICTS NALGONDA AND WARANGAL.— The dilapidated Kakatiya temples at Nagulapadu in district Nalgonda and Nidikonda in district Warangal were dismantled and the reconstruction work at Nagulapadu is in progress.

HARYANA

The Department of Archaeology and Museums,- Government of Haryana have completed the annual and special clearance work on the following state protected monuments:

4. ANCIENT STUPA AT CHANETI, DISTRICT AMBALA.
5. TOMB OF SHEIKH TAYYAB, KAITHAL, DISTRICT AMBALA.
6. BHIMA DEVI TEMPLE, PINJORE, DISTRICT AMBALA.
7. SHISH MAHAL, FARUKHNAGAR, DISTRICT GURGAON.
8. CHHATA RAI BAL MUKAND DASS, NARNAUL, DISTRICT MAHENDRAGARH.
9. CHOR GUMBAD, NARNAUL, DISTRICT MAHENDRAGARH.
10. MIRZA ALIJAN AND BAOLI, NARNAUL, DISTRICT MAHENDRAGARH.
11. PIR TURKMAN, NARNAUL, DISTRICT MAHENDRAGARH.

KARNATAKA

12. **MANDAPA 1 AND 2 ON THE NORTH SIDE OF VIRUPAKSHA BAZAR, HAMPI, DISTRICT BELLARY.—** Conservation of these *mandapas* have been taken up and completed.

13. GATEWAY TO THE NORTH OF VIRUPAKSHA TEMPLE, HAMPI, DISTRICT BELLARY.— Resetting of the slanting pillars and beams, replacement of the missing members and providing lime concrete weather proof course on the roof and lime concrete floor had been taken up and was completed.

14. EXCAVATED REMAINS, HAMPI, DISTRICT BELLARY.— Palatial structures 5 and 6 have been conserved by resetting the fallen members and pointing to the walls and edging to the floor.

15. SHIVAPPA NAYAKA PALACE, DISTRICT SHIMOGA.— Conservation of this monument taken up in 1984 has been continued. Setting up of the museum, offices of the Curator and the Registering Officer in the backyard have been completed.

16. BRICK TEMPLE, ARALAGUPPE, DISTRICT TUMKUR.— Conservation work of this monument taken up last year has been continued. This complex consists of five brick temples (pl. LXX). Conservation of three of these temples has been completed and that of the fourth is in progress. Two wells have been traced in the course of conservation, one of them is square and another is a terracotta ring well.

MADHYA PRADESH

17. DEVRANI-JETHANI TEMPLE, TALAGOAN, DISTRICT BILASPUR.— The remains of the original plinth structure of the temple was exposed and site cleared off.

18. RANI MAHAL, ISLAMNAGAR, DISTRICT BHOPAL.— All damaged portions of the fortification

wall around Rani Mahal were repaired with identical material by chopping off the top portion with special mortar plastering with the use of water proofing compound and pigments to stop further decay. Damaged main entrance gate of fort was also restored by providing wooden beams and levelling of back side and open verandah of Rani Mahal on the river side.

19. GUJARIMAHAL, GWALIOR DISTRICT, GWALIOR.— All window-slabs were rendered with 1:2:4 concrete bed after removing the old lime concrete of 20mm thick by using pigments and water proofing compounds.

20. MONUMENTS OF GWALIOR FORT, GWALIOR, DISTRICT GWALIOR.— Parapet wall around old Jail building infront of Kama Mahal on the west side was restored by C.R. Masonry work. The damaged identical shrines were watertightened and joints were made with pointing.

21. SIVA TEMPLE, CHORPUR, DISTRICT SHIVPURI.— The damaged approach road to the Siva temple at Chorpur was reconditioned for preventing seepage of water. The superstructure was water-tightened and rough packing on the top of the *sikhara* was done. The temple was watertightened and the loose missing stones were restored. The damaged flagstone flooring of the platform was restored by pointing the floor and completing with toned cement mortar. The collapsed *jagati-terrace* on the western side was rebuilt in cut-stone ashlar masonry.

RAJASTHAN

Conservation work was carried out in the following monuments:

22. CENOTAPH OF MOOSI MAHARANI, ALWAR, DISTRICT ALWAR.
23. GUMBAD FATEH JUNG, ALWAR, DISTRICT ALWAR.
24. AMBER PALACE, JAIPUR, DISTRICT JAIPUR.
25. ASTRONOMICAL OBSERVATORY, JAIPUR, DISTRICT JAIPUR.
26. CENOTAPH OF RAJA BHARMAL, AMBER, DISTRICT JAIPUR.
27. OLD PLATFORM, BASWA, DISTRICT JAIPUR.
28. PATWON KI HAVELI, JAISALMER, DISTRICT JAISALMER.
29. CENOTAPH OF AMAR SINGH RATHORE, NAGAUR, DISTRICT NAGAUR.
30. SIVA TEMPLE, KEKIND, DISTRICT NAGAUR.
31. TEMPLE OF MAKARMANDI MATA, NEEMAJ, DISTRICT PALI.

UTTAR PRADESH

32. CHHATARIS OF KUSUMVAN SAROVAR, NEAR GOVARDHAN, DISTRICT MATHURA.— In continuation of the previous year's work *(1984-85,* p.262), the Archaeological Department, Government of Uttar Pradesh carried out conservation work. The vertical cracks developed due to the roots on the domes have been repaired. Apart from this, a dilapidated minature dome has also been repaired.

WEST BENGAL

33. GOKULCHAND TEMPLE, GOKULNAGAR, DISTRICT BANKURA.— The temple has been completely restored by pointing the walls matching the original, re-laying mortar on the terraced roof maintaining proper slope and alignment, refixing the stone slab depicting of the temple, providing brackets, filling up of the voids and sealing with appropriate mortar, reconstruct ing the stair-cases at the entrance on the south and east and re-laying lime-concrete mortar on the floors of sanctum and vestibule including the circumambulatory path.

34. SURYA TEMPLE, SONATAPAL, DISTRICT BANKURA.— Brickwork in superstructure keeping proper alignment and strips matching the original, replacement of the worn-out bricks from the walls and ornamentation with bricks cut into regular shape and size as per existing designs including placing in position with appropriate mortar and pointing on the exterior surface of the superstructure of the temple as well as the facade after raking out joints have been done.

35. SIDDHANATHA SIVA TEMPLE, DHALUABARI, DISTRICT COOCHBEHAR.— The conservation work of the temple has been completed with the reconstruction of the upper part of the *ratnas* matching the original and cracked portion of the dado (outside edge) matching the adjacent edge and resetting of the cracked and projected (missing) tiles on the facade, cut into proper shape and size were carried out. Further lime-punning of the exterior surface of temple as well as the *ratnas* and patch repairs to walls, ceilings, temple courtyard, etc., were also carried out.

36. JATILESVAR SIVA TEMPLE, PURBABAHA, DISTRICT JALPAIGURI.— The stone-built improvised hut situated on the right side of the temple was dismantled and the stones obtained from it (which obviously belonged to the dilapidated temple) were suitably used in re-erecting the crumbled walls and the new shed for installing the image of Vishnu-Narayana placed in the hut on the north-western corner of the temple. Decorated and sculptured stone slabs (lying in *situ)* were re-set in their usual positions and were properly clamped. These decorated and sculptured stone slabs were also suitably treated with chemicals. The broken boundary wall of the vestibule was also reset matching the existing one - both according to height and slope. Brushing of the walls of the superstructure was also done. The circumambulatory path was reconstructed as per the existing one. The voids on walls were grouted and punning work on walls of the sanctum in the interior was carefully done. The loose lifesize figures of the *dvarapalas* (on both sides of the entrance) were set on specially prepared stands.

X. EXPEDITION OUTSIDE INDIA

EXCAVATION AT HAMAD TOWN, BAHRAIN.— KM. Srivastava with the assistance of S.A. Sali; K.S. Ramachandran, S.B. Kaul, D.B. Krishna, Pramod Singh, A.K. Sinha, C.S. Patil, S.S. Saar, S.N. Tikoo, R.N. Kaw, M.S. Mani and Basheer Khan conducted excavation of burial mounds adjacent to a new township named after the Crown Prince Shaikh Isa Bin Salman Al Khalifa with the Government of Bahrain. For further expansion and development of the new township, the excavation of the burial mounds at Hamad Town in the adjacent area was an immediate necessity.

In all seventy graves were excavated by the team, of which two were simply low lying natural formations. The burial mounds could be divided mainly in four types. One of them is a cairn type having flattened top of the mound, the second a tumulus with filled up oblong burial chamber made of undressed stones and conical top, the third a tumulus with oblong burial chamber of semi-dressed stones and conical top and the fourth having irregular chamber with flattened top of the mound. All the four have a number of sub-types.

In the first type of graves a small depression was made in the natural soil (bed-rock) by scooping out the area where the dead body was to be interred. A bed of earth was then prepared to place the body and the funerary goods. Thereafter the overall burial area was enclosed by a ring wall of stones. After placing the dead body and funerary goods in a central position, the area was further demarcated with the help of undressed courses of stone one above the other, placed in such a projecting manner as to form a domicile ceiling over the skeletal remains. The funerary goods were kept in an attached alcove lower in height. The alcove also had the same type of ceiling. Having completed the construction of the burial chamber and the alcove, they were filled up with hard earth and flattish stone chips. In the last stage of construction the entire area with ring wall, alcove and the chamber, was covered in a cairn of medium-sized stones and earth. During the course of cairn building the ring wall was also covered up completely.

The mode of construction in burials of the second and third type was entirely different. But for the filled up oblong burial chamber made of undressed and semi-dressed stones the construction of the two was similar. In type two the burial chamber was filled up and made of undressed stones, whereas in type three it was unfilled and made of semi-dressed stones.

But for the burials in the cup-like depression with a flat surface on the south-western fringe of the elevated land, the burials as a whole were constructed on a high ground. Besides placing the dead body on the limestone bed rock, limestone, quarried at the site, was used in the construction of the grave as well.

The shape of the burial chamber in the first type of graves was an irregular circle. In the second and third types it was normally oblong, whereas in the fourth altogether irregular without any specific shape. Burial chambers were generally built without any use of mortar, but in several cases mud mortar was used to set the stones of the chamber, particularly in type two. The stones of the burial chamber were invariably set in mud mortar in those cases

in which the bed rock was cut deep. The use of completely undressed stones was a general rule in the first, second and fourth type of graves. Semi-hewn stones were used only in type three. The semi-hewn face of the stone was kept on the inner side of the chamber, so as to present a clean vertical appearance.

The maximum height of the chamber below the capstones in the first type was 0.70m, whereas in the other three types 1.10m. The maximum length of the chamber in types two and three was about three metres and the width 1.25m. The occurrence of the subsidiary chambers was rare amongst the burials excavated.

The orientation of the burial chamber in the second and third type of graves was normally east-west inclined a little towards north and south. There was hardly any difference in the orientation of the dead body and the burial chamber. The head was towards east. The dead body was placed in a flexed position resting on the right side with the right hand under the head. In an isolated example the body was in a fully articulated position. There was no question of any orientation in the burial chambers of type one, but the orientation of the dead body alongwith its flexed position happened to be similar in types two, three and four.

The stones used as capstones were always large in size, sometimes massive, with both upper and lower surface almost flat.

Funerary goods were normally kept in the alcoves. Of all, the most important funerary goods, an Indus seal, was kept almost in the centre of the burial chamber. Amongst the grave goods mention may be made of pottery, beads of various materials like terracotta, steatite, shell, crystal, agate, carnelian, alabaster, shell rings and seals with spiral designs and knobbed perforated head, two steatite circular seals, copper rings, rod and spear head. The majority of the graves did not yield any funerary goods.

The island of Bahrain occupies an altogether unique position in respect of chronology, because it has been worked out as a single settlement site of Qala' at-al Bahrain without confirmation at a few other sites. It has already been pointed out that the funerary goods in the graves at Hamad Town were desperately poor. With the help of pottery a tentative relative date could be assigned to the graves by comparing the shapes found at Qala' at-al Bahrain. The team was fortunate enough in finding an Indus steatite seal with inscription. The Indus seal was found in grave No. 1757 of type two. With the help of the seal and corroborated by the types of pottery, the graves of type two have been dated between 2200 and 2000 BC. The graves of type three belong to a later Period as worked out from the pottery. They have been dated between 2000 and 1800 BC. According to the terms of common usage in Bahrain, type two belongs to Barbar I and type three to Barbar II Periods. On the basis of pottery the graves of type four have been assigned to Kassite Period i.e. later than 1800 BC, may be between 1800 and 1600 BC. It was not possible to date the burials of type one in the absence of any datable evidence.

Being the first circular seal from a grave in Bahrain, the Indus seal has importance of its own in archaeology. Carrying two animals in two tiers, one a unicorn/bull and the other a peacock, the circular seal has four letters of the Indus script. The peacock, found for the first time on Indus seal, is looking back in a majestic manner and the unicorn/bull appears in a charging position. Taking the positive into consideration and the writing from right to

left the four letters correspond with number 59, 233, 25, and 1 of Mahadevan's concordance tables. The seal has a knobbed back with two perforations drilled at either end of the bottom and groove across on the top with a diameter of 2.9 cm. The seal is 1 cm thick, excluding the knob. The maximum height of the knob is 0.5 cm and thickness 1.7 cm. The material is fine grey steatite. The seal corroborated that Bahrain and other Gulf countries worked as intermediate station on the trade route between Indus valley and Mesopotamia.

XI. ARCHAEOLOGICAL CHEMISTRY

TREATMENT OF MONUMENTS AND PAINTINGS[1]

ANDHRA PRADESH

1. VEERABHADRASWAMY TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.— The remaining painted area of 50sq m was subjected to chemical treatment. Old translucent preservative coat, oil and sooty matters were removed. Toluene, cellosolve, triethanolamine, butyl lactate and morpholine were used either individually or in combination depending upon the type of accretions. Filleting of loose plaster, filling of voids and consolidation of loose pigment were also carried out. Entire area was then preserved with 1.5% solution of polyvinyl acetate in toluene.

2. CHARMINAR, HYDERABAD, DISTRICT HYDERABAD.— North-east and North-west minarets and the mosque wall connecting the minarets on the northern side, upto second floor, were treated for the removal of vegetational growth. An area of 396 sq m out of the total area of 926 sq m was treated with 1:3 mixture of 1-3% ammoniacal solution and teepol. The cleaned area was given an application of 1% aq. solution of sodium pentachloro-phenate followed by pre servative of 3% polymethylmethacrylate in toluene.

3. RAMAPPA TEMPLE, PALAMPET, DISTRICT WARANGAL.— An area of 246 sq m including the sculptures, bracket figures and carvings on pillars and walls of the temple, was treated for eradication of vegetational growth, lime wash, greyish ingrained accretions and bat excreta. Vegetational growth was removed by using 1% aqueous ammonia and teepol. Lime wash was removed with 5% acetic acid. The treated area was given a coat of 1% sodium pentachloro-phenate as fungicide followed by a solution of preservative 3% polymethylmethacrylate in toluene.

ASSAM

4. SIVA TEMPLE, NEGHERTTING, DISTRICT JORHAT.— In continuation of last year's work {*1984-85,* p.263), the removal of thick growth of moss and lichen was completed by using liquid ammonia and non-ionic detergents. The cleaned area was given fungicidal treatment with zinc-silicofluoride followed by preservation with polyvinyl acetate in toluene.

BIHAR

5. STUCCO FIGURE OF TEMPLE 3, NALANDA, DISTRICT NALANDA.— The broken pieces of the head

[1]Information from : 42, 47 and 48 Department of Archaeology and Museums, Rajasthan; 61-64 Department of Archaeology, West Bengal; and the rest from Director (Science) of the Survey.

of stucco figure of seated Buddha in southeastern tower at Temple 3 were assembled together and the head was repaired. The missing parts were moulded in plaster of Paris mixed with adhesives. The repaired head was refixed in position to the wall with the help of stainless steel bars, etc. The figure was colour matched with earth colours and finally preserved.

DELHI

6. RAMPARTS (INSIDE) CAPULUS ON EITHER SIDE OF FLAG POLE, RED FORT, DELHI.— The chemical treatment and preservation work to ramparts (inside) capulus on either side of flag pole at Red Fort, Delhi was accomplished in the beginning of August 1985. The work involved removal of bird excreta, vegetational growth, dust and dirt with the help of ammonia and teepol solution. Sooty and tarry matter was removed with the help of organic solvents. Finally the treated area was removed with the help of organic solvents and was preserved with perspex solution in toluene after the application of *1%* aqueous solution of sodium penta-chlorophenate as fungicide.

7. DIWAN-I-AM, RED FORT, DELHI.— The marble structure of Diwan-i-Am, Red Fort was affected by the tenacious dust, dirt and superficial accretions. The structure was chemically cleaned with the help of dilute mixture of ammonia and teepol in water. Finally marble surface was polished with wax. The work has already been completed.

8. NAUBAT KHANA, RED FORT, DELHI.— The exterior stone surface of Naubat Khana, Red Fort, was covered by the growth of moss, lichen and bird excreta which was giving patchy appearance of vegetative growth. It was removed by a dilute mixture of ammonia and teepol in water. Removal of bees' wax was carried out by organic solvents and at some places by melting it with slight heating. After the fungicidal treatment, 2% preservative coat of perspex, in toluene was applied.

9. PAINTING, ROSHANARA BARADARI, DELHI.— The painting of Roshanara Baradari was sub jected to chemical treatment for the removal of dust, dirt and other superficial accretions with the help of suitable organic solvents. The chemically cleaned surface was finally preserved with 2% preservative coat of methylmethacrylate solution. The work is in progress.

10. SIKANDER SHAH LODI'S TOMB, DELHI.— The stone and plastered surface of Lodi tomb was freed from dust, dirt, superficial accretions and vegetational growth i.e., lichen, moss, algal growth with the help of dilute solution of ammonia mixed with teepol. The cleaned surface was preserved after fungicidal treatment.

11. ISA KHAN'S TOMB, NEW DELHI.— The stone surface of tomb wall was covered with moss, lichen, algal growth, bird excreta along with dust and dirt. The surface was chemically treated by using dilute ammonia solution mixed with teepol. Fungicidal treatment was given with 1% aqueous solution of sodium pentachlorophenate and finally preserved with perspex solution in toluene. The work of chemical treatment is in progress.

12. JAMALI KAMALI TOMB AND MOSQUE, NEW DELHI.— The removal of vegetational growth, dust, dirt and other undesirable accretions was carried out with the help of a mixture of ammonia and teepol in water. The chemically cleaned surface has been given a fungicidal coat followed by the preservative coat of perspex solution in toluene. The dust, dirt and smoke on the painting of the tomb were removed by using various organic solvents. Finally 2% coating of preservative was applied.

13. SUBZ BURJ, NEW DELHI.— The paintings were treated with organic solvents, and at some places 10% acetic acid was also used for the removal of thick coat of lime. The chemically cleaned surface was preserved with the application of 2% perspex solution. The work is in progress.

GOA DAMAN AND DIU

14. DAMAN MONUMENTS, DAMAN.— The five gates leading to the main hall of the Holy Jesus Church and the gates of fort walls which were covered with thick growth of moss and lichen were chemically cleaned with 2 to 3% aqueous ammonia solution and teepol. These were then preserved with 2 to 3% solution of polyvinyl acetate in toluene.

15. SE CATHEDRAL, VELHA GOA.— The gilded main altars, pulpit, and small chapels were dusted to remove the thick layer of dust and dirt with the help of soft sable-hair-brushes and burnished with satin cloth. The tarnished silver candle stands were chemically treated and preserved with 1% polyvinyl acetate solution in toluene.

16. ST.CAJETAN CHURCH, VELHA GOA.— The gilded altars which were covered with heavy layer of dust and dirt and bird excreta were dusted with soft sable-hair-brushes and burnished with satin cloth giving a shining look to the gilding. The panel and canvas paintings were chemically treated to remove old darkened varnish followed by preservation and retouching wherever necessary. Patches of missing canvas were also replaced with new ones and matched as per requirements. The portions of panel paintings eaten by insects were filled with saw dust powder, moulded with suitable adhesive.

HIMACHAL PRADESH

17. BUDDHIST MONASTERIES, TABO, DISTRICT LAHAUL AND SPITI.— The paintings on the north wall (middle portion) and north-west and south-west corners of the west wall of Kyilkhang were subjected to chemical treatment using organic solvents and preserved with 3% solution of polyvinyl acetate in toluene. The filleting and fixing of cracks and holes and colour matching were also done followed by documentation of treated portion. The paintings on the sinister side of the southern wall of Bromtonlha Khang were treated with organic solvents after the removal of excessive dust and dirt. The treated area was then preserved with 3% solution of polyvinyl acetate in toluene. Filleting, fixing of loose plaster, filling of gaps and cracks and colour

matching were done on the treated area (pls. LXXI-LXXII) .

JAMMU AND KASHMIR

18. PATHAR MASJID, SRINAGAR, DISTRICT SRINAGAR.— The exterior of the south wall which was covered with dust, dirt and vegetational growth was treated with ammonical solution and detergents. The treated area was preserved with 1% polyvinyl acetate after the application of fungicide.

KARNATAKA

19. TIPU SULTAN PALACE, BANGALORE, DISTRICT BANGALORE.— North-west chamber was chemi cally cleaned by compress method. Requisite quantity of a strong solution of sodium bicarbonate and sodium salt of ethylene-diamine-tetra-acetic-acid with nylon pulp over a Japanese tissue paper was applied on the paintings and allowed to remain for five to fifteen minutes depending upon the accretions. Afterwards the tissue was gently removed and the treated surface was allowed to dry. By this technique the paintings brightened considerably revealing the details in their original tone and colour.

20. AMRITESWARA TEMPLE, AMRITPURA, DISTRICT CHIKMAGALUR.— The work of chemical treat ment and preservation of the exterior of *navaranga* walls was initiated. The vegetational growth was removed using 10% (V/V) aqueous ammonia and a non-ionic detergent. The work is in progress.

21. VIDYASHANKARA TEMPLE, SRINGERI, DISTRICT CHIKMAGALUR.— The entire exterior of this temple and part of the interior of *navaranga* hall was chemically treated and preserved. The work involved the removal of vegetational growth, patches of lime wash, oily matter and soot. The chemicals used were aqueous solutions of ammonia and non-ionic detergents, acetic acid and triethanolamine. After the chemical treatment, 1% aqueous solution of sodium pentachlorophenate was applied as fungicide. The treated area on the exterior was then finally preserved with 2% solution of polymethyl-methacrylate in toluene.

22. SRI KANTHESWARA TEMPLE, NANJANGUD, DISTRICT MYSORE.— An area of 520 sq m including ceilings of north and south Dalans adjoining the open courtyard and the sculptures in these Dalans were taken up for the removal of ingrained lime wash coating by physico-chemical means using 10% (V/V) acetic acid in water. Oily matter, soot and vegetation on the exterior were removed by using mixture of liquor ammonia and toluene. The entire area was preserved.

23. MADHUKESWARA TEMPLE, BANAVASI, DISTRICT NORTH CANARA.— An area of 55 sq m consist ing of two panels of *ashtadikpalas,* base *of dhavaja* and *deepa-stambhas* was chemically treated for the removal of vegetational growth and oil stains. The work is in progress.

MADHYA PRADESH

24. KANDARIYA MAHADEVA TEMPLE, KHAJURAHO, DISTRICT CHHATTARPUR.— The blackened surface of the *mahamandapa* of this temple was taken up for chemical cleaning using aqueous ammonia and non-ionic detergent. An area of about 100 sq m was satisfactorily cleaned. The work is in progress.

25. LAKSHMANA TEMPLE, KHAJURAHO, DISTRICT CHHATTARPUR.— The outer stone surface of the temple was covered with hard deposits of lime besides vegetational growth and other superficial accretions. An area of 1030 sq m was chemically treated using dilute ammonia mixed with non-ionic detergent, followed by fungicidal treatment with zinc-silicofluoride and finally pre served with polyvinyl acetate in toluene. The work of chemical treatment in *mahamandapa* of this temple is in progress.

26. STUPA, SANCHI, DISTRICT RAISEN.— The railings and gateways of Stupa 1 were subjected to chemical treatment for the removal of the vegetational growth and other undesirable accretions using liquor ammonia together with non-ionic detergent. An area of 812 sq m was thus cleaned and preserved with polyvinyl acetate after applying zinc-silicofluoride as fungicide.

MAHARASHIRA

27. AJANTA CAVES, AJANTA, DISTRICT AURANGABAD.— Chemical cleaning for the removal of accretions like dust, dirt and old darkened varnish was completed on pillar 6 facing north wall and panel 7 on east wall in the cave 17. This was followed by the application of a preserva tive coating of 2% polyvinyl acetate in toluene.

The work of consolidation of loose pigments and filling of cracks in western aisle of cave 2 was done with plaster of Paris mixed with fevicol and earth colours. Similarly, in caves 6,16 and 17, the fixing of loose painted plaster and bulgings were done by injecting a 3-5% poly vinyl acetate solution.

In addition, the fumigation with ethoxide gas was also done in cave 4 to eradicate insect activity.

28. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.— The red sand-stone structure of the main building was taken up for eradication of dust, dirt and thick vegetational growth. An aqueous ammonia (1-5%) solution was used as required with idipol, a non-ionic detergent and then washed thoroughly. A 3% solution of zinc-silicofluoride was applied as fungicide followed by a preservative coating of 3% polyvinyl acetate in toluene.

The marble area in the front of mausoleum was found covered with thick deposits of oily accretions due to constant touching by visitors. A thick coat of lime was also present on decorative portions. Oily stains were removed by hydrogen-peroxide while dust and dirt was cleaned with ammonia solution and idipol. For the removal of yellow stains chloramine-T, EDTA etc. were used. Lime was removed mechanically.

The brass doors had become greasy due to constant touching by visitors and also corroded due to atmospheric action. These were, therefore, treated with alkaline Rochelle salt solution, idipol and citric acid and then thoroughly washed with water. A solution of 1,2,3-benzo-triazole in alcohol was applied as an inhibitor and its efficacy was studied.

29. ELLORA CAVES, ELLORA, DISTRICT AURANGABAD.— Fixing and filleting of ancient paintings was carried out with plaster of Paris and fevicol in Cave 32 (Side chamber). Chemical cleaning of paintings was continued on the south and west walls in *Nandi-mandapa* of Cave 16 exposing a painting depicting a group of disabled men and inscription on the south wall. A person shown as a snake charmer and an inscription were exposed on the west wall. Nine inscriptions were exposed after chemical treatment which are yet to be deciphered.

30. KANHERI CAVES, BOMBAY.— The stone sculptures and walls in Caves 1,2 and 3 covered with thick growth of moss and lichen were cleaned using 1% solution of ammonia and idipol. Polycide was used as fungicide to prevent vegetational growth and finally the cleaned portion was preserved with 1% acripol-P in toluene.

31. GONDESHWAR TEMPLE, SINNAR, DISTRICT NASIK.— Out of the four sub-shrines of this complex, Ganesh shrine was taken up for the removal of dust, dirt and vegetational growth using 1% solution of ammonia and idipol. The work is in progress.

32. SHANWARWADA, PUNE, DISTRICT PUNE.— The paintings in Shanwarwada, executed on lime plaster were found covered with dust, dirt, old darkened preservative, etc. The dust and dirt were removed with soft sable-hair-brushes and then the paintings were chemically treated with organic solvents to remove old preservative and other accretions. The cleaned paintings were finally preserved with 1% polyvinyl acetate in toluene.

Apart from this cleaning, lime wash from some old paintings was removed. As an experimental work, a portion of lime wash in one of the arches was removed chemically as well as mechanically to reveal these paintings.

ORISSA

33. ROCK-SHELTER PAINTINGS, SITABHENJI, DISTRICT KEONJHAR.— The painting in red and white depicting the royal procession executed on the rough undersurface of stone boulder was chemically cleaned to remove the superficial accretions of dust, dirt, spider webs, cocoon etc. The old preservative coating was removed with cotton soaked in toluene and a fresh coat of 2% polyvinyl acetate with 1% butyl lactate was applied.

34. TWIN TEMPLES OF NILAMADHAB AND SIDHESHWAR, GANDHARADI, DISTRICT PHULBANI.— In continuation of the last year's work *(1984-85,* p.268), the chemical cleaning of dried black patches of moss and lichen from the *jagamohana* of Nilamadhab temple was continued. The cleaned area was preserved after fungicidal treatment.

35. RAJARANI TEMPLE, BHUBANESWAR, DISTRICT PURI.— The chemical treatment work for eradication of vegetational growth was taken up on the north side. The hard thick patches of dried vegetational accretions, which did not yield to chemicals easily, were soaked with cotton swabs in ammonia-teepol solution, and then mechanically cleaned with brush for com plete removal.

36. SUBSIDIARY SHRINES, LINGARAJA TEMPLE COMPLEX, BHUBANESWAR, DISTRICT PURI.— In continu ation of the last year's work *(1984-85,* p.268), the moss, lichen and algae were removed chemically from the subsidiary shrines behind the temple using dilute ammonia. The black patches were bleached with oxalic acid. One of the shrines was cleaned and preserved. The work is in progress.

37. CHAUSATH YOGINI TEMPLE, HIRAPUR, DISTRICT PURI.— This being a living temple, villagers put oil on the sculptures accumulating thick layers of oily dust, thereby completely obliterating ornamental fineness of these figures. These were first brushed with dry coir brushes and then washed repeatedly with teepol using stencil brushes to remove oil and dust. These were finally cleaned with cotton swabs soaked in benzene. To give a uniform appearance and brightness, they were preserved and burnished after applying wax polish. The surface of stone structure, being rough, had thick hardened accretions of moss and lichen which were removed by treat ment with a mixture of ammonia and teepol. The cleaned stone surface was given an appli cation of fungicide coat followed by a preservative coat of 2% methylmethacrylate in toluene.

38. SUN TEMPLE, KONARAK, DISTRICT PURI.— Under a well-articulated phased programme for chemical cleaning, consolidation and preservation of this magnificient structure, the removal of black and green layers of dried moss and lichen with dilute ammonia, was taken up in the first phase. The Maya Devi temple, horses and elephants alongwith their platforms on the south and north side of the main temple were chemically cleaned.

39. JAGANNATH TEMPLE, PURI, DISTRICT PURI.— In continuation of last year's work *(1984-85,* p.269), the deplastered areas on lower portion of the *deul* of main temple on southern side were subjected to chemical cleaning with dilute acetic acid for the removal of lime accretions. The cleaned areas have been given a fungicidal coat followed by a preservative coating.

40. LAKSHMI TEMPLE, LORD JAGANNATHA TEMPLE COMPLEX, PURI, DISTRICT PURI.— The eradica tion of cryptogamic growth of moss and lichens from the *sikhara* and *pidhas* of *jagamohana* was carried out using dilute ammonia solution. The lime wash from outer portion of side walls of *jagamohana* and *natamandir* was removed by using dilute acetic acid. The chemically cleaned areas were given a fungicide coat followed by a preservative coat of methyl meth-acrylate in toluene.

41. NARASIMHA TEMPLE, JAGANNATH TEMPLE-COMPLEX, PURI, DISTRICT PURI.— The chemical treat ment of this temple was taken up for the removal of lime accretions from the deplastered

surface. The work was taken up on eastern and northern sides. The lime accretions were being removed by chemico-mechanical means using 3-4% solution of acetic acid followed by thorough washing with teepol solution for removal of dust and dirt.

RAJASTHAN

42. GOVERNMENT MUSEUM BUILDING, AJMER, DISTRICT AJMER.— Eradication of vegetation growth is in progress.

43. NEELKANTH MAHADEVA TEMPLE, ALWAR, DISTRICT ALWAR.— During the course of chemical treatment thick layer of dust, dirt and lime deposit were removed mechanically. Remaining lime was removed by dilute acetic acid with the help of nylon brush. After chemical treatment, fungicidal treatment was given with one percent aqueous solution of sodium pentachloro-phenate. The treated area was finally preserved.

44. CHITRA SHALA, CHHATAR MAHAL, BUNDI, DISTRICT BUNDI.— The superficial accretions like dust, dirt, water marks, smoke and old preservative were removed from the paintings in corner rooms using various orgnic solvents like benzene, acetone, methanol, cellosolve etc. The treated surface was finally preserved with a coat of 2% polyvinyl acetate in toluene.

45. KALIKA MATA TEMPLE, CHITTAURGARH, DISTRICT CHITTAURGARH.— Chemical treatment work on the stone sculptures and carvings in the *pradakshinapatha* of the temple was carried out for the removal of old and hard incrustation of lime plaster using acetic acid which revealed obscure details of beautiful small sculptures and carvings. The chemically cleaned areas were preserved with 2-3% polyvinyl acetate solution in toluene.

46. FORT WALL AND SAMBHAVNATH TEMPLE, JAISALMER FORT, JAISALMER, DISTRICT JAISALMER.— The fort wall which at places was painted with acrylic emulsion paints, was cleaned using various organic solvents like methylene chloride, acetone, toluene, carbon-tetra-chloride, etc. At several places the paint did not respond to any organic solvent and hence pyro-technique was employed for its removal.

Chemical treatment work on stone carvings and sculptures inside the Sambhavnath temple was carried out using mixtures of teepol and ammonium hydroxide in different ratios with the help of nylon brushes. These carved sculptures were finally preserved with 2-3% polyvinyl acetate in toluene.

47. SCULPTURES IN TEMPLES OF MAGARMANDI GODDESS, NEEMAZ, DISTRICT PALI.— Chemical conservation of ten selected sculptures at protected temples of Magarmandi Goddess was undertaken *in-situ*. These were having weathering effect.

48. WALL PAINTINGS AND CARVINGS, UDAIPUR, DISTRICT UDAIPUR.— Some wall paintings and carvings were exposed from the facade of Bagore Haveli at Udaipur.These were covered under

several layers of dirt. The dirt was cleared and the paintings and carvings were brought to light on the facade facing to the lake.

TAMIL NADU

49. SIKHAGIRISWARA TEMPLE, KUDUMIAN MALAI, DISTRICT PUDUKOTTAI.— Chemical cleaning for the removal of vegetational growth and other accretions from inscriptions on the pillars and lime plastered sculptures of main shrine and Amman Shrine was initiated by using 3:1 mixture of aqueous ammonia and teepol followed by thorough washing. The lime wash was removed with 3% acetic acid in water. The treated area was given a coat of 5% sodium pentachlorophenate as fungicide followed by preservative coat of 2% polymethyl methacrylate in toluene.

50. AIRAVATESVARA TEMPLE, DARASURAM, DISTRICT THANJAVUR.— The vegetational growth from the sculptures of lime plaster, in the main *vimana, mukhmandapa* and front *gopura* of the temple, was eradicated by using 3:1 solution of aqueous ammonia and teepol. The treated area was subjected to fungicidal treatment with 1% sodium pentachlorophenate in water followed by preservation with 2% polymethyl methacrylate solution in toluene.

51. AMMAN SHRINE, SUBRAHMANYA SHRINE AND RAJARAJA GOPURA, BRIHADISVARA TEMPLE COMPLEX, THANJAVUR, DISTRICT THANJAVUR.— Chemical treatment of above shrines and *gopura* was initiated. The method adopted was the use of aqueous solution of ammonium hydroxide and teepol in 3:1 proportion and the area treated was subjected to 5% sodium pentachlorophenate in water as fungicide followed by preservation with 2% solution of polymethyl methacrylate in toluene.

52. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.— The vegetational growth of moss and lichen was eradicated from the lime plaster of *vimana* of this temple by using 5% aqueous ammonia with 1% teepol followed by a thorough wash. Over the treated area 5% sodium pentachlorophenate was applied as fungicide followed by 2% polymethyl methacrylate in toluene as preservative.

UTTAR PRADESH

53. TAJ MAHAL, AGRA, DISTRICT AGRA.— The chemical treatment of lower arches and marble *jali* in the main cenotaph was carried out for removing soot, grease, dust and dirt by applying a pack of magnesium trisilicate and aluminium silicate containing a little teepol, ammonium hydroxide and hydrogen peroxide. This was followed by the use of organic solvents like ethylene dichloride, benzene and triethanolamine. The treated surface was finally cleaned with cotton swabs soaked in distilled water.

54. GROUP OF TEMPLES, JAGESHWAR, DISTRICT ALMORA.— Some areas of this group of temples which had earlier remained untreated, were taken up for eradication of vegetational growth

using aqueous ammonia. The treated area was applied with a coat of fungicide and preservative.

55. PRINCE KHUSRO'S TOMB, ALLAHABAD, DISTRICT ALLAHABAD.— The paintings on the inside walls of this tomb, covered with dust, dirt, soot and greasy matter over the old preservative coat, were cleaned with the help of a mixture of organic solvents like toluene, methanol, triethanolamine, cellosolve, etc., and given a fresh preservative coat of polyvinyl acetate. The stains due to bat excreta in upper corners of walls were removed by applying a semi solid paste of 1:4 sodium bicarbonate and carboxy-methyl-cellulose.

56. BARA IMAMBARA, LUCKNOW, DISTRICT LUCKNOW.— The vegetational growth was removed from the front and rear walls of the main building by treatment with dilute ammonia solution. The cleaned area was given a fungicide coat followed by 3% of polyvinyl-acetate coat in toluene as preservative.

57. RUMI DARWAZA, LUCKNOW, DISTRICT LUCKNOW.— The top and left portion of Rumi Gate was chemically treated with 5% ammonia solution for the removal of vegetational growth of moss and lichens from the plastered surface. The left portion was given fungicide and preservative coatings. The work is in progress.

58. ARCHAEOLOGICAL MUSEUM, SARNATH, DISTRICT VARANASI.— The facade of the museum building, covered with black patches of dried moss and lichen, was cleaned by treating with dilute ammonia.

59. DHAMEKH STUPA, SARNATH, DISTRICT VARANASI.— The upper portion of the stone structure having ornamental patterns was covered with dust and greasy matters. These accretions were removed with cotton swabs soaked in toluene. The vegetational accretions were removed by using dilute ammonia.

WEST BENGAL

60. SHYAM RAI TEMPLE, BISHNUPUR, DISTRICT BANKURA.— The lime accretions on the terracotta plaques were removed by using very dilute acetic acid. The cleaned plaques were given a preservative coat of 3% polyvinyl acetate in toluene.

61. GOKUL CHAND TEMPLE, GOKULNAGAR, DISTRICT BANKURA.— The vegetational growth on this magnificent temple has been removed and the entire sanctum has been brought back to its original form by the application of suitable chemicals and complexing reagents. After elimination of the injurious salts and undesirable stains, the *avataras,* square decorations etc. have been preserved by application of solutions of accurate strength.

62. SURYA TEMPLE, SONATAPAL, DISTRICT BANKURA.— Chemical treatment of extensive fungi-

cidal growth on the unique ornamented northern side of the superstructure was carried out subsequently preservative solution of higher concentration have been applied.

63. SIDDHANATH SIVA TEMPLE, DALIYA BARI, DISTRICT COOCHBEHAR.— The fungicidal treatment on the much affected terracottas (possibly white-washed) having *Puranic* scenes including images of Vishnu and his *avataras* as also floral decorations of Siddhanath Siva temple at Daliyabari, had been performed by the application of dilute ammonia solution. Suitable action had also been taken for the elimination of injurious salts. Undesirable stains on the terracottas have been removed by the application of arometic solvents. Finally, a coat of preservative of vinyal acetate of appropriate strength was applied.

64. JATILESVARA SIVA TEMPLE, PURBABAHA, DISTRICT JALPAIGURI.— The undesirable plants were destroyed with the help of suitable chemicals.

TREATMENT OF EXCAVATED OBJECTS AND MUSEUM EXHIBITS[1]

65. Four thousand two hundred and twenty-five coins of silver debased with copper from a hoard of Kasindra (Jodhpur) were chemically cleaned and preserved.

66. Sixty stuffed animals from ethnographical collections of the Government Museum, Mandore, Bharatpur and Jodhpur were subjected to chemical treatment.

67. Thirty-three stone sculptures were given chemical treatment for display in the National Congress Centenary Exhibition.

68. Nineteen sculptures were chemically preserved in Government Museum, Bikaner.

69. A carpet belonging to Government Museum, Bikaner, was subjected to disinfection treatment.

70. An old cannon of mixed metals displayed in the Indira Chowk, Dholpur was provided a trial cleaning *in situ* and one copper axe from Ganeshwar (Sikar) was given chemical treatment.

71. Terracottas and sculptures of Rajani Kanta Gnan Mandir Museum in the district of Midnapur were chemically treated and preserved. Suitable steps were also taken for the sterilisation of books and *pata-chitras* in the said Museum.

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[1]Information from: 65-70, Department of Archaeology and Museums, Rajasthan; 71-72, Department of Archaeology, West Bengal; and 73-75, National Research Laboratory for Conservation of Cultural Property, Lucknow.

72. Excavated Iron Objects, Pandu Rajar Dhibi, District Burdwan have been receiving attention for appropriate chemical preservation.

73. A large number of archaeological artifacts from various sites, like Sringverpura, Manjhi and Dwarka were conserved during the year under review.

74. A number of *thankas* belonging to the Patna Museum were conserved as part of a special project.

75. Ancient paintings, wooden objects, ivory, illustrated manuscripts, etc. were also preserved.

RESEARCH AND ANALYSIS[1]

76. EFFECT OF NOXIOUS GASES ON MARBLE AND SANDSTONE OF TAJ, AGRA.— There is enough evidence to establish that polluted air accelerates the deterioration of marble and sandstone. Major categories of air pollution are caused by transport, vehicles, domestic heating, power generation, refuse burning, industrial fuel burning and process emissions. Keeping in mind the effects of air pollution on materials, a project to study the effects of nox gases like nitric oxide and nitrogen dioxide on marble and sandstone of Taj Mahal at Agra was initiated.

The project is based on the following reactions for producing nitric oxide and nitrogen dioxide gases.

$$FeCl_3 + 3NaNO_2 = 3NaCl + Fe\,(NO_2)_3$$
$$2Fe\,(NO_2)_3 + 3H_2O = 2Fe\,(OH)_3 + 3NO_2 + 3NO$$

The samples of marble and sandstone were collected from Taj and were cut into standard sizes.

The experiment was carried out in a standard enclosed chamber of $0.134m^3$ volume. Following conditions and precautions were taken to observe the said effects.

i. The sample pieces were first cleaned thoroughly with toluene, acetone: toluene (1:1) and finally with acetone and then placed for an hour at 40°C to widen the pores of marble and sandstone.
ii. The sample pieces were weighed accurately upto four places of decimal.
iii. Then the sample pieces were placed on a wooden board at an angle of 45°
iv. Gases were produced inside the chamber.
v. The specimens were exposed on UV-light on each working day for two hours (to produce as far as possible the true weathering action).

[1]Information from: 76-83, Director (Science) of the Survey; and 84, National Research Laboratory for Conservation of Cultural Property, Lucknow.

vi. The humidity was created more or less 100% if and when necessary by inserting boiling water through the tube in the chamber, vii. Initial and final temperatures were noted by inserting the thermometer inside the chamber.

viii. Each step of reaction was carried out for 15 days.

ix. After completion of each step, the sample pieces were weighed again accurately upto fourth places of decimal. In this case the standard adopted was the gain in weight.

The effects could be known from the difference in weights. The project was completed upto three stages. Still there was no effect. Now concentration of gases is being increased and the effects thereupon shall be observed. A plan has been chalked out to observe the effect of pollutants after applying different types of preservatives.

77. STUDY OF BINDING MEDIUMS OF DIFFERENT ANCIENT PAINTINGS BY THIN LAYER CHROMATOGRAPHY (TLC), INFRA-RED SPECTROPHOTOMETER (IR) AND GAS CHROMATOGRAPHY.— As most of the binding mediums are complex in nature and generally undergo extensive changes in composition and properties with time, it is very difficult to confirm those by one single routine method. That is why several different sophisticated and sensitive instrumental techniques have been adopted for identification and confirmation of binding materials used.

Samples of mural paintings were collected from ancient monuments like Bagh caves and Bhojashala, Madhya Pradesh; Tabo, Lahaul and Spiti, Himachal Pradesh; Amber palace, Jaipur, Rajasthan; Leh, Ladakh, Jammu and Kashmir. The total number of analysis was thirteen. Further work is in progress.

78. STUDY ON VARIOUS PARAMETERS WHICH ARE LIKELY TO EFFECTS MONUMENTS OF AGRA ON ACCOUNT OF AIR POLLUTION.— The factors studied were: (a) Level of SO_2 concentrations at Taj and Sikandra by automatic SO_2 monitors, (b) Sulphation rate studies at Taj and Sikandra, (c) Dust fall measurements at Taj, Sikandra and Red Fort, and (d) Meteorological studies at Taj and Sikandra namely temperature and humidity fluctuations inside the dome of Taj and rain fall studies pertaining to total amount of rainfall, its conductivity and pH values.

From the records of SO_2 levels at Taj and Sikandra it was observed that the average values of higher and lower concentration during the year 1984-85 varied between 5 ug/m^3 to 20ug/m^3. Higher values were also recorded upto 25ug/m^3. It was observed that SO_2 values increase during winter season. On the whole SO_2 levels are low at present. The values will suddenly shoot up if the expansion of industrial activities are not checked and their expansion allowed with out sufficient safeguards. Rain fall studies revealed quality and extent of pollutants in the rain falling on the Taj. pH of rain water was between 6.5 and 7 i.e. more or less neutral. The pollution monitoring laboratory is monitoring and measuring the meteorological-parameters as well. Several reports based on findings have been submitted.

79. STUDY OF MINERAL COMPOSITION AND PROPERTIES OF MINERALS USING DIFFRACTION AND ANALYTICAL TECHNIQUES.— Analysis of samples was done qualitatively and quantitatively first, and then

the structure of minerals was evaluated using X-ray diffraction technique. Qualitative and quantitative analysis is being done by standard techniques of analysis (micro and macro) and X-ray diffraction by Debye Scherver camera. The samples in capillary tube are bombarded by $CuKx_1$ The rings were studied after developing the film. Bragg's equation nA.=2d Sin 8 and interpretation of various properties, helped to assign mineral composition and structure.

The analysis of Tabo pigments revealed following composition:

White Pigment-(Ca\cite $CaCO_3$- Cube which has probably been transformed into rhombohedron).

Green Pigment-(malachite, $CuCO_3$, $Cu(OH)_2$), Blue Indigo ($C_6H_{,0}O_2N_2$).

Golden Pigment-Bronze, Cu and Zn in traces and Au.

Red Haematite- Fe_2O_3, dark-red in colour- rhombohedral system.

Red- Cinnabar (Hgs)- Hexagonal crystals.

Black Pigment- Only carbon.

The marble samples from Taj are being analysed qualitatively by diffraction techniques. There is a possibility of the presence of magnetoferrite, MgO, Fe_2O_3 in it.

80. The materials excavated at Bhagwanpura were chemically analysed and examined in great detail. Apart from the usual red coloured pottery black object of this material were also found occasionally. The red and black strips found in pottery at those sites were also examined.

Inference drawn from physical and chemical analysis of pottery sherds.

(i) Porosity studies of ancient pottery from Bhagwanpura revealed that temperature of firing was moderate i.e. 300°C to 400°C in case of black pottery sherd as it had moderate porosity. The porosity result for red sherd, indicated a firing temperature between 800°C and 1100°C.

(ii) Organic content of black pottery gives the inference that the firing temperature was low. Moreover it was carried out in reduced atmosphere as indicated by high organic content. Low content of organic material in red pottery signifies that firing was carried out in oxidised atmosphere.

(iii) Thermogravemetric and differential thermal analysis study of black pottery showed that the firing temperature must be between 300°C and 600°C as exothermic peak appeared at 466°C. Similar study with red pottery showed that firing temperature must be higher than 900°C. We came across insignificant peak also which could be attributed to impurity.

(iv) The chemical analysis of black pottery revealed that whole of its iron was present as black ferrous oxide with accounts for its black colour. Thereby indicating that black pottery was fired in reduced atmosphere whereas in red pottery iron was oxidised. In one specimen the material scrapped from the surface i.e. black strips from red pottery had similar chemical composition and I.R. spectra as that of black pottery shows similar composition.

(v) Infra red studies for red pottery showed first peak at $1000cm^{1}$ to $1100cm^{1}$ and corresponded to Si-0 streching. The second peak at $850cm^{1}$ corresponded to Si-F. Similarly, the studies with black pottery revealed that the first peak corresponded to Si-0 strech. The medium peak which occured at $800cm^{1}$ corresponded to some organic compounds i.e. trisubstituted olefins. Peak at $450cm^{1}$ corresponded to aroma-tive streching.

81. STUDY OF PIGMENTS FROM ANCIENT PAINTINGS (TABO MONASTERY, TABO; KHUSROBAGH; DEEG; AND KILA ANDROOM, PATIALAI.— The striking feature of early paintings is that all pigments were used in brightest and purest form singly and very rarely in a mixed form except with white and usually without admixture of brown or black. Microscopic study on pigments reveals that many pigments were coarsely ground, since the method of grinding was primitive one Chemical identification of pigments proved useful in establishing relative date of picture as well as inertness of the pigment towards most of the chemical and atmosphere. For identification of pigments it is necessary to study solubility chemical composition and refractive index to establish their physical nature. Study of chemical analysis involves first to bring the pigment into solution. Solubility was studied first with nonpolar medium and then with polar medium. Solubility of pigments predicted that most of pigments are inert towards organic solvents most of the pigments are acid soluble as well as soluble the aqua-regia. After bringing pigment into solution chemical composition was determined by micro chemical analysis. Specific tests were carried out for determining both +ve and -ve counterparts of pigment of functional group. For confirmation of certain pigments refractive index study was carried out.

82. STUDY OF TAJ MARBLES BY SCANNING ELECTRON MICROSCOPE.— The study of surface enrich ment was carried out of the marble slabs placed at different altitudes which would be indicative of the variety of particulates deposited over there with varying altitudes. The study is in progress.

83. STUDY AND ANALYSIS OF ANCIENT TEXTILES.— Study of Mughal textiles was taken up.

84. The National Research Laboratory for Conservation of Cultural Property, Lucknow, has undertaken several research projects to find out solution to several difficult conservation problems:

(a) *Iron and Copper Metallurgy in Ancient India:* Under this project, samples from various excavated sites like Allahapur, Dwarka, Hulaskhera, Kumarnahalli, Jajmau, Bhardwaj Ashram and Sringaverpura, were analysed metallographically. Some copper objects namely a celt and a bangle from Lai Qila and Kirtipur (U.P.) sites were also studied metallographically. Technical studies were carried out to know the fabrication techniques of objects. Analytical studies of samples were carried out by emission spectroscopy, atomic

absorption spectrophotometry, X-ray florscence techniques. The study was incorporated to ascertain the corrosion product and nature of patina at the surface.

(b) *Biodeterioration studies:* Biodeterioration growth on organic materials is quite a common feature. A programme was launched to study the microflora that grows on *thankas.* A number of *thankas,* belonging to Patna Museum were examined and fungi isolated and identified. Control methods within the Laboratory were successfully experimented. Some of the fungi isolated on *thankas* were: *Aspergillus niger, A. Condidus* and *Talaromyces trachyspermus.*

Similar studies were continued on other materials. Identification of wood samples and fungi present on *bhuta* images of Crafts Museum were completed. The woods identified were: *Artocarpus* Sp. *(kathal)* and *Shorea* Sp.(sal)

(c) *Studies on Materials of Taj Mahal:* In order to understand fully the causes of deterioration of Taj Mahal a long term project has been started to study the properties of the materials of the Taj. So far plaster, marble, sandstone used in the Taj have been analysed. Samples of hard accretions of Taj surface have been collected for analysis. Other studies relating to physical and meteorological parameters connecting with the Taj are in progress.

(d) *Technique for Conservation of Sandstone:* A long-term project has been started to conserve the Mathura sandstone. Several sculptures have already been treated. Under the project the efficacy of the various consolidants and surface coatings on the fresh quarry-stone samples will be studied.

(e) *Dyes in Historic Textiles:* For proper conservation of old textiles, the identification of different dyes used is of primary importance. The Laboratory has developed a system for the identification of red dyes in old textiles using thin-layer-chromatography and infra red spectrophotometry techniques.

(f) *Glass Technology in Ancient India:* Under this project, glass samples from Hulaskhera and Fatehpur Sikri excavations were analysed. The extract of the studies made are:

(i) *Studies on Glass samples from Hulaskhera:* Glass beads and bangles belonging to early Christian era were studied. The glasses were of soda type, except one bead specimen which was a potash glass. Two beads were of semi-precious stones. Most of the objects were green or blue coloured. However, some objects were of amber colour also. Some of the double play bangles were of yellow or orange colour. The orange colour was found to be due to lead stannate, and copper accounted for blue colour. These colours were found to be modified by the presence of other elements in the glass giving a variety of shades ranging from colourless to buff, dull green, sea green, bluish green, greenish blue, dirty violet and purple. Two beads were found to be gold coated.

(ii) *Ceramic Samples from Fatehpur Sikri:* Some medieval glazed wares excavated at Fatehpur Sikri were studied by crystallographic, microscopic and atomic absorption spec-

trophotometric techniques. Alkali content of these ceramics was low and was mainly soda blue colour of glass was due to cobalt and the bluish green due to copper. Core of the object was made of powdered quartz pebbles. Application of colouring material was done after applying the glaze on the objects, followed by a single stage firing at a temperature of 900°C.

XII. ARCHAEOLOGICAL GARDENS[1]

ANDHRA PRADESH

1. MONUMENTS, NAGARJUNAKONDA, DISTRICT GUNTUR.— New plants were introduced in the garden around monuments. Efforts are on way to improve water supply arrangement so as to extend further plantation in new area.

2. GOLCONDA FORT, DISTRICT HYDERABAD.— The garden was maintained properly.

DELHI

3. MONUMENTS IN DELHI.— Sixteen archaeological gardens in different monuments in the Union Territory of Delhi were well maintained.

GOA, DAMAN AND DIU

4. CHURCH GARDEN, VELHA GOA, DISTRICT GOA.— The garden was kept in a good condition. New flowers and rose beds were introduced. Dot plantations in the lawns were also done.

GUJARAT

5. SUN TEMPLE, MODHERA, DISTRICT MEHSANA.— Development of a new garden is envisaged.

6. JAMI MASJID, PAVAGARH, DISTRICT PANCH MAHALS.— During the period under report pumping set has been installed and net-work of pipe-lines have been spread from Delhi Gate to Jami Masjid in order to provide irrigational facilities to the newly developed garden.

7. HAZIRA TOMB, VADODARA, DISTRICT VADODARA.— The development of garden around this tomb further continued by laying pipe-line and taking water connection from the Municipal Board.

KARNATAKA

8. MALLIKARJUNA TEMPLE, PATTADAKAL, DISTRICT BIJAPUR.— The garden which is situated on the eastern bank of the Malaprabha river gets generally dry during summer. Attempts are on way to have a regular supply of water.

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[1]Information from Chief Horticulturist of the Horticulture Branch of the Survey.

9. HOYSALESVARA TEMPLE, HALEBIDU, DISTRICT HASSAN.— To solve the water scarcity during summer, arrangement is being made for sinking of new bore well. After laying the P.V.C. pipe line for proper irrigation in the newly acquired area along Dwara Samudra, coconut plantation has been done.

10. GUMBAZ-I-SHAHI, GANJAM, DISTRICT MANDYA.— Additional 110 mm PVC pipe-line has been laid to facilitate sufficient irrigation to the garden. Plants of colourful nature have also been introduced in a 'L' shaped front bed.

MAHARASHTRA

11. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.— Inspite of scarcity of water, the garden around the site has been maintained. A few outlived lawns have also been returfed.

ORISSA

12. SUN TEMPLE, KONARAK, DISTRICT PURI.— The garden activities in the newly acquired area of 26 acres have been increased manifold. The area has been duly fenced, paths have been carved, befitting dot plantations have been done. Irrigational facilities are being provided by laying pipe-line.

RAJASTHAN

13. FORT, CHITTAURGARH, DISTRICT CHITTAURGARH.— The vast fort complex at Chittaurgarh is being landscaped in phases. During the period steps have been undertaken for development of gardens around Jaimal and Fattah House, Kirtistambha, Rana Kumbha Palace and Vijay Mandal.

TAMIL NADU

14. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.— During vegetation clearance and earth work, ancient kacha roads and paths, irrigational channels and star shaped flower beds in the northern and western side have come to light. The work was cautiously carried put so as to expose all the hidden ancient structures. From the unearthed structure it is adduced that there might have been existing garden in olden days.

UTTAR PRADESH

15. RAM BAGH, AGRA, DISTRICT AGRA.— The entire available land has been renovated on Mughal pattern garden and casualties in the plantation have been suitably replaced. Red sand stone slabs on the central paths have been fixed.

16. ARCHAELOGICAL SITE, SARNATH, DISTRICT VARANASI.— The land recently acquired has been levelled and other aspects of gardening are in progress.

XIII. PUBLICATIONS

PUBLICATIONS OF THE SURVEY

1. INDIAN ARCHAEOLOGY — A REVIEW.— The issue for the year 1983-84 was published and the one for 1984-85 has been sent to the press.
2. ANCIENT INDIA.— Numbers 9 to 15 have been reprinted.
3. ANNUAL REPORT ON INDIAN EPIGRAPHY.— The issues for the years 1887-1905, 1906-10 and 1911-14 have been reprinted.
4. EPIGRAPHIA INDICA.— Parts III to VI of volume XXXIX have been brought out.
5. EPIGRAPHIA INDICA— ARABIC AND PERSIAN SUPPLEMENT.—The issue for the year 1976 is made press ready and issue for 1977 is under finalisation.
6. SOUTH INDIAN INSCRIPTIONS.— Volumes XXI, XXII, XXV and XXVI are in advanced stage of printing.
7. CORPUS INSCRIPTIONUM INDICARUM.— Part III of volume VII, *Inscriptions of Paramaras* is in final stage of printing.
8. MEMOIRS OF THE ARCHAEOLOGICAL SURVEY OF INDIA.— Numbers 78, *Lothal,* volume II by S.R. Rao and number 82, *Satanikota* by N.C. Ghosh have been brought out. Number 83, *Daimabad* by S.A. Sali; number 84, *Panhale Kaji* by M.N. Deshpande and Number 85, *Nagda* by N.R. Banerjee are in advanced stage of printing.
9. GUIDE BOOKS.— *Nalanda* (Sixth edition) by A. Ghosh and *Konarak* (third addition) by Debala Mitra have been reprinted. Besides, two new guide books, *Junagadh* by KV. Soundara Rajan and *Lothal* by S.R. Rao have been brought out.
10. PICTURE POST CARDS.—A set of coloured picture post cards on Sanchi monuments has been printed.

OTHER PUBLICATIONS

ANDHRA PRADESH.— The Department of Archaeology and Museums, Government of Andhra Pradesh, has brought out the following publications during the year under review.

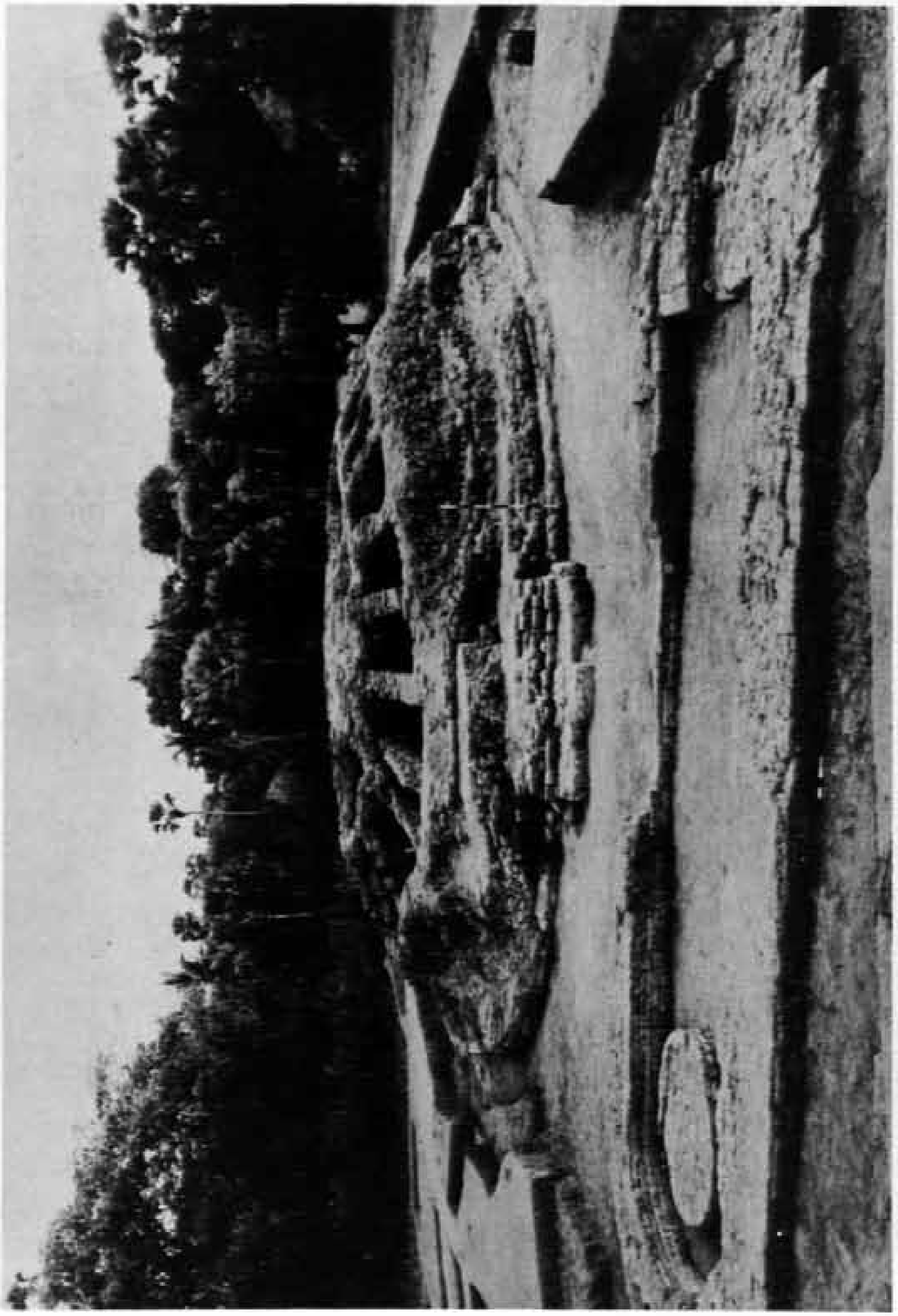
a. Annual Report 1970-71
b. *Journal of Andhra Historical Research Society,* Volume 38 part III (Dr.N. Venkataramana-yya Commemoration Volume)
c. *Nalacharitra* (Telugu)
d. *Andhra Pradesh Journal of Archaeology*

HIMACHAL PRADESH.— The Department of Language and Culture, Himachal Pradesh, brought out *Reflection on Art* and *Takri Primer* and a set of coloured picture postcards on Pahari miniature paintings during the year under review.

KARNATAKA.— The Directorate of Archaeology and Museums, Karnataka, brought out the following publications during the year under review:

a. *Vijayanagara Progress of Research 1983-84,* edited by M.S. Nagaraja Rao.
b. *Recently acquired Copper Plates in the Directorate of Archaeology and Museums in Karnataka,* by M.S. Nagaraja Rao and K.V. Ramesh.
c. *M.H. Krishna, his biography and works* by A. Sundara and K.G. Nagarajan.
d. *Topographical List of Vijayanagara Inscriptions,* Vol. I by B.R. Gopal.

RAJASTHAN.— The Department of Archaeology and Museums, Rajasthan, published the departmental bulletin *The Researcher* (volumes XIV-XV) edited by P.L. Chakravarty. Two brochures on miniature paintings of Government Museums, Alwar and Udaipur have also been brought out.



Adurru: stupa and chaitya. *See p. 2*



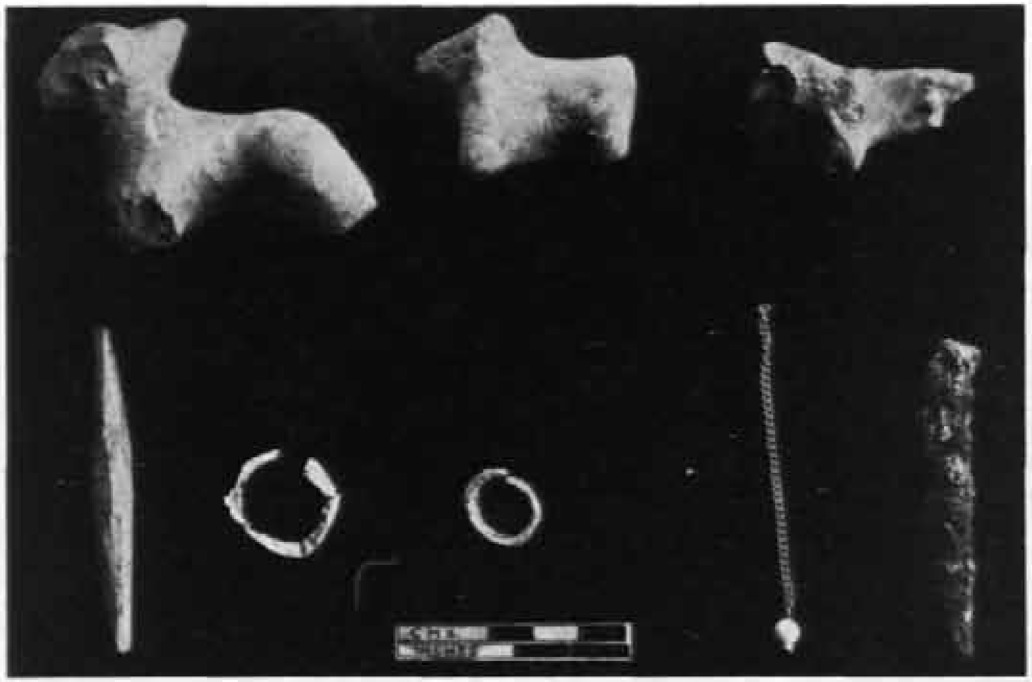
Peddavegi: drum of the stupa and parkara wall. See p. 5



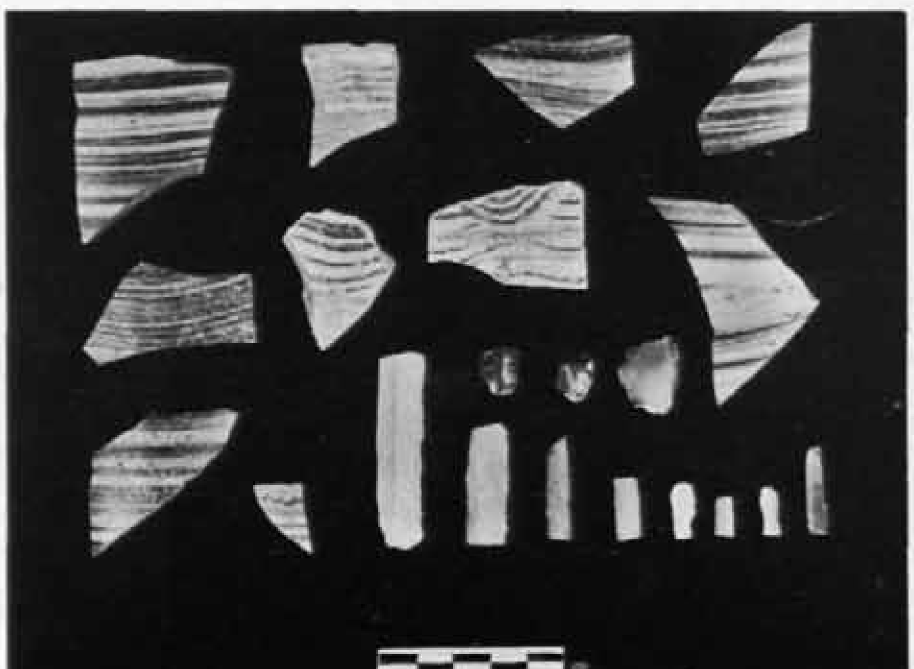
Peddavegi: Ekadasamukha Rudra. *See p. 6*



Peddavegi: Kalabhairava. *See p. 6*



A. *Maner: terracotta, metal and bone objects.* *See p. 12*



B. *Kanmer: potsherds, blades and microliths.* *See p. 15*



Goraj: brick structures. *See p. 23*



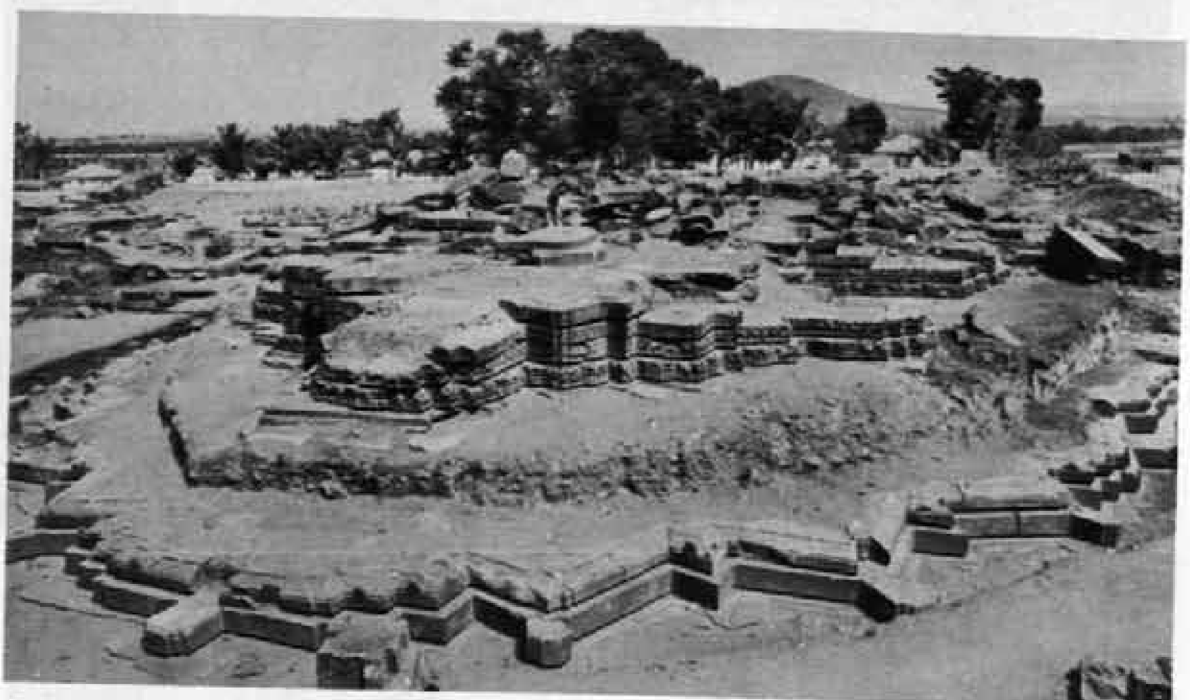
A. *Hampi: Buddhist panel. See p. 40.*



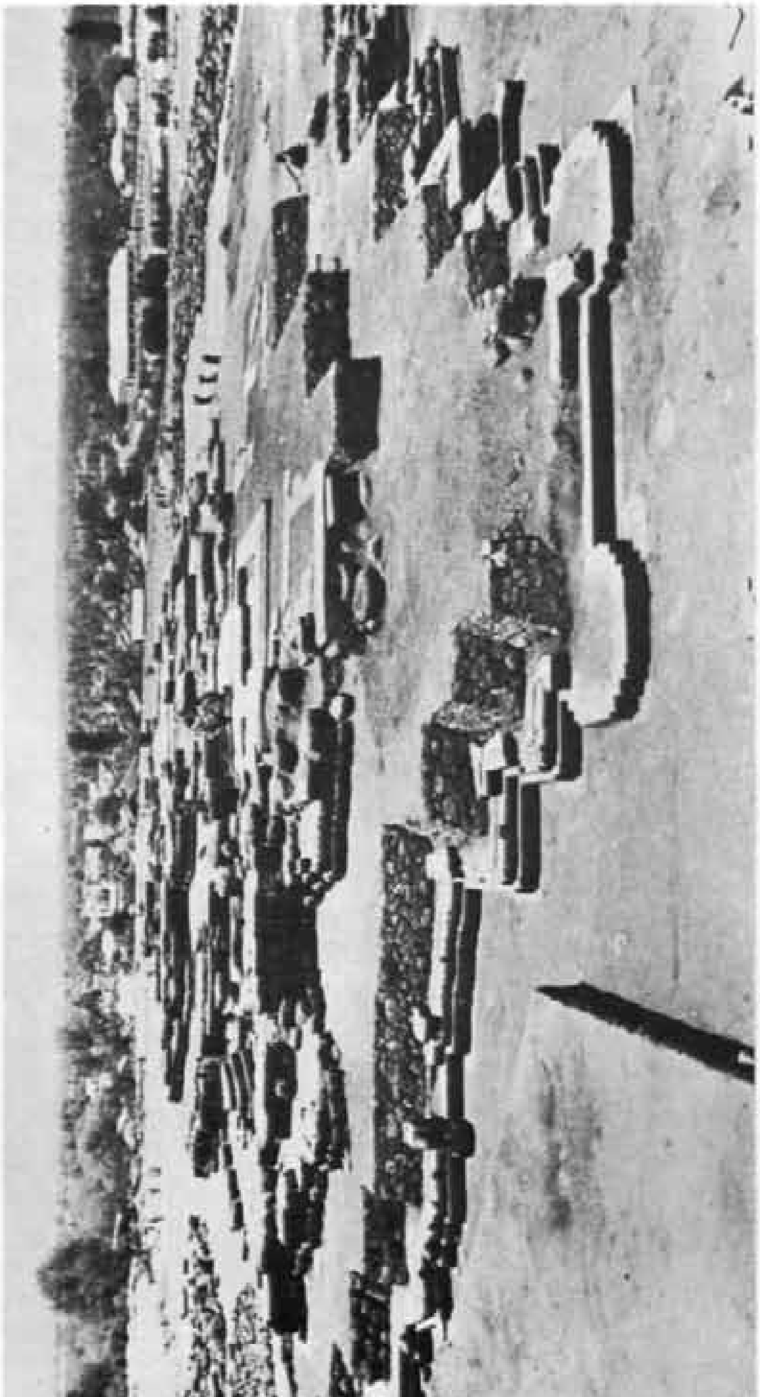
B. *Hampi: Buddhist panel. See p. 40.*



A. *Halebidu: view of the exposed temple.* *See p. 43*



B. *Halebidu: temple showing jagati and adhisthana.* *See p. 43*



Halebidu: general view of temple 3. See p. 43



Halebidu: image of Madanika. See p. 43



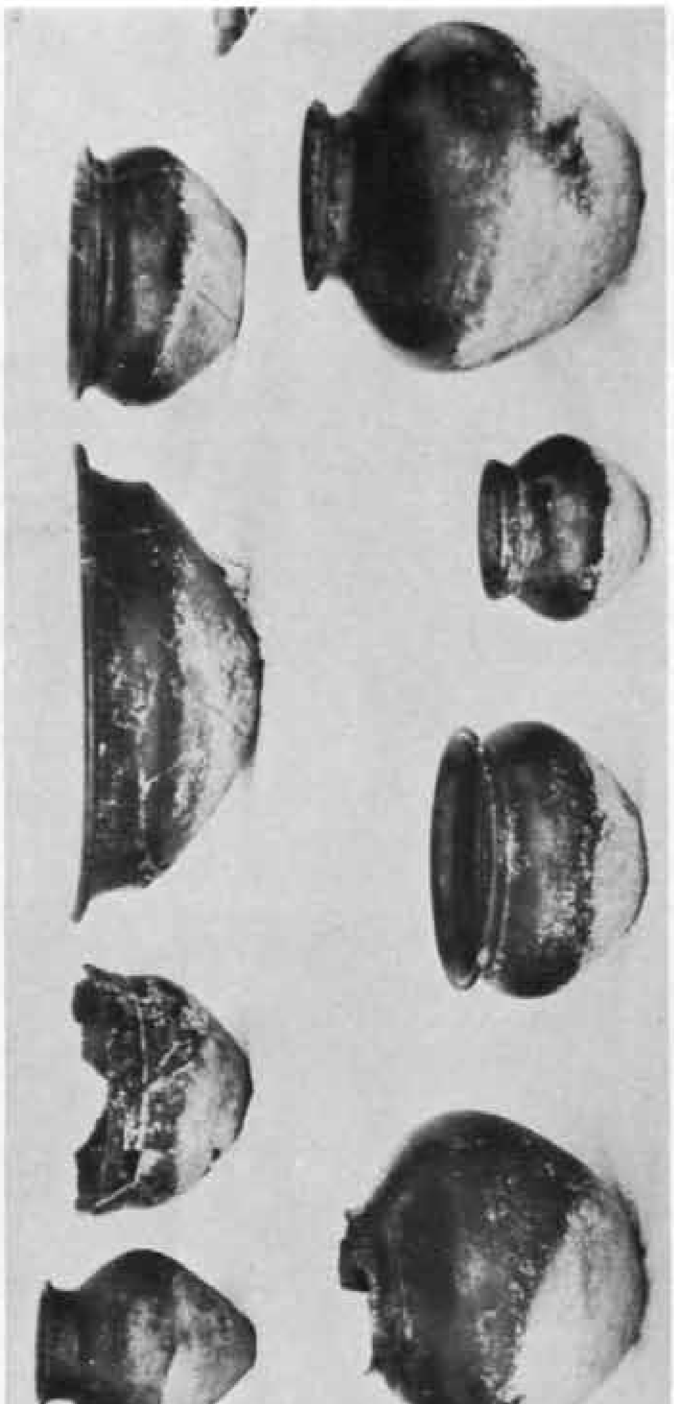
A. *Banahalli: cairn burial. See p. 44*



B. *Banahalli: burial with funerary objects. See p. 44*



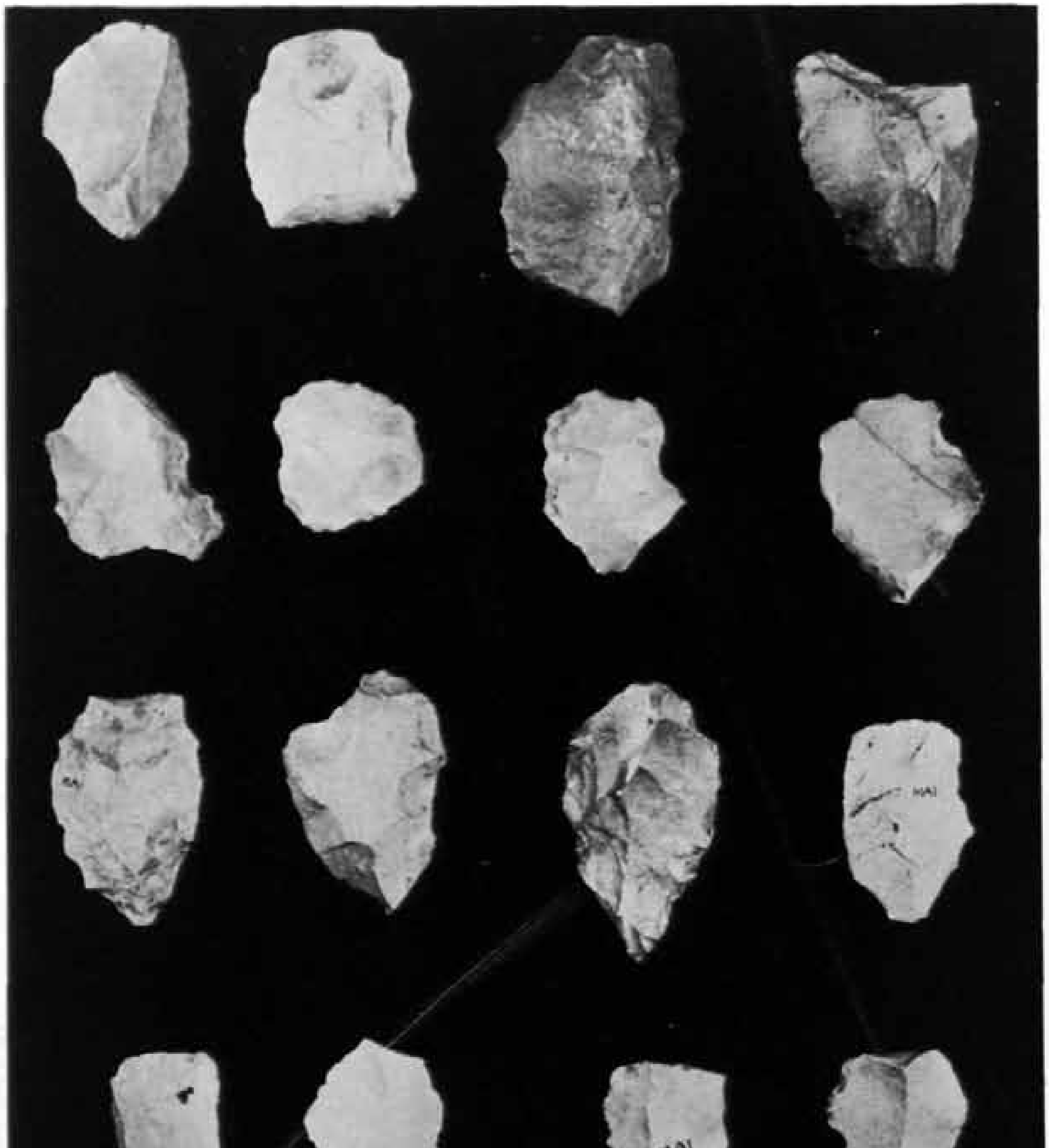
Banahalli: circular house. See p. 44



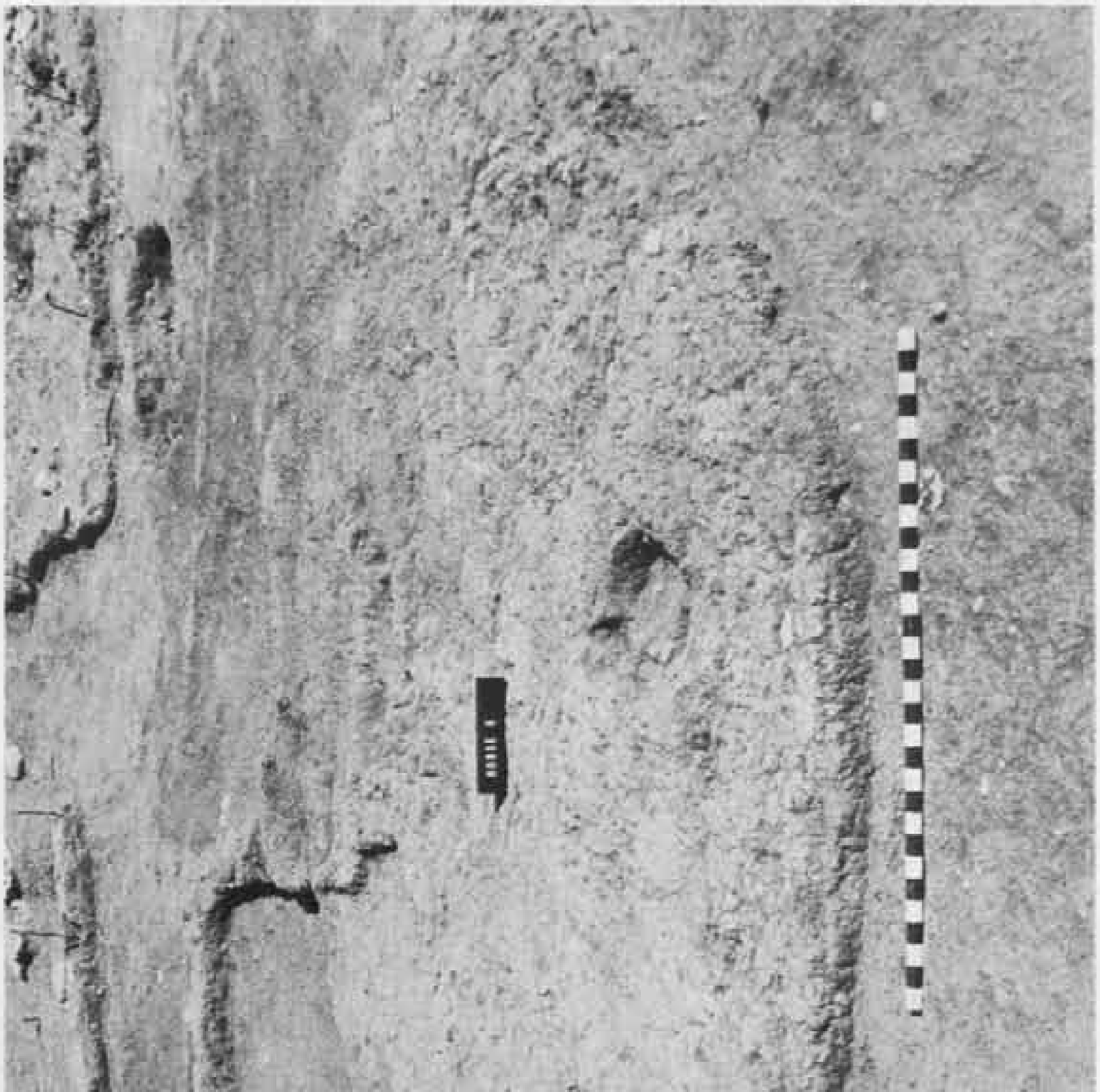
Banahalli: Megalithic pottery types. *See p. 44*



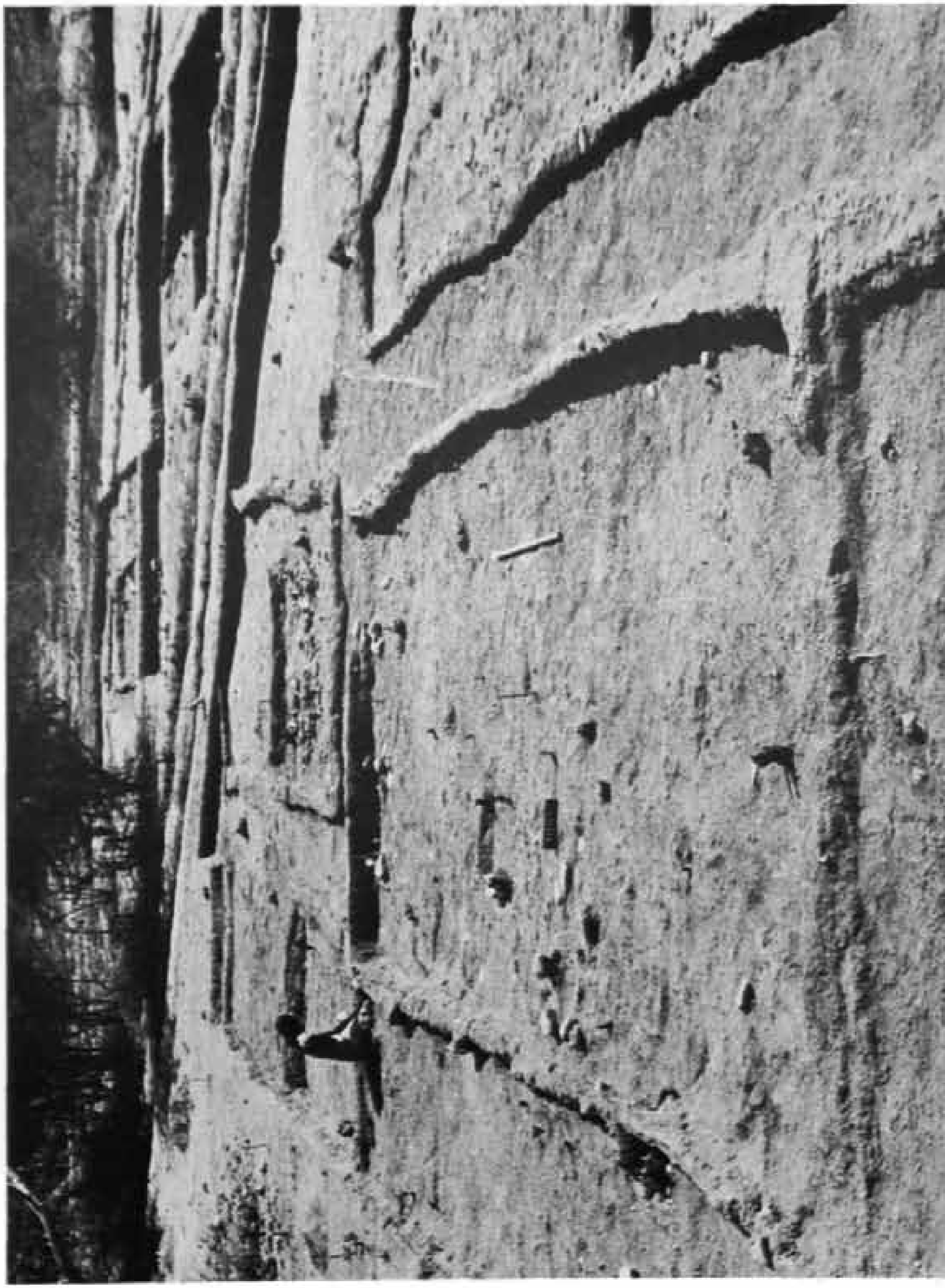
Maihar: palaeolithic tools. See p. 55



Mukher (Tal): middle palaeolithic tools. *See p. 60*



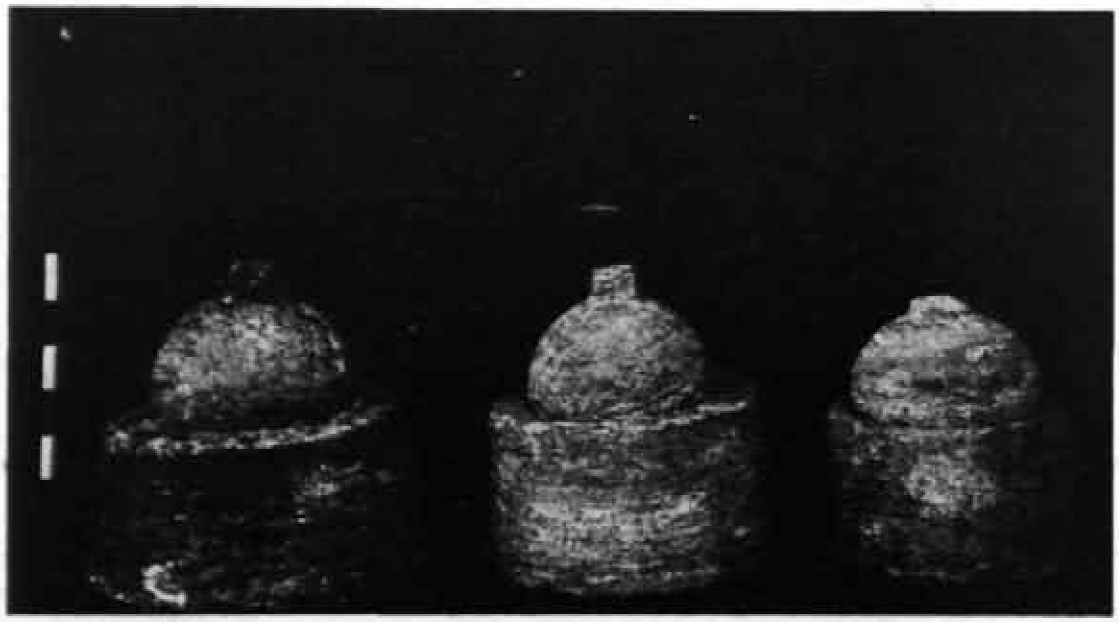
Walki: circular floor. *See p. 61*



Walki: rectangular houses. *See p. 61*



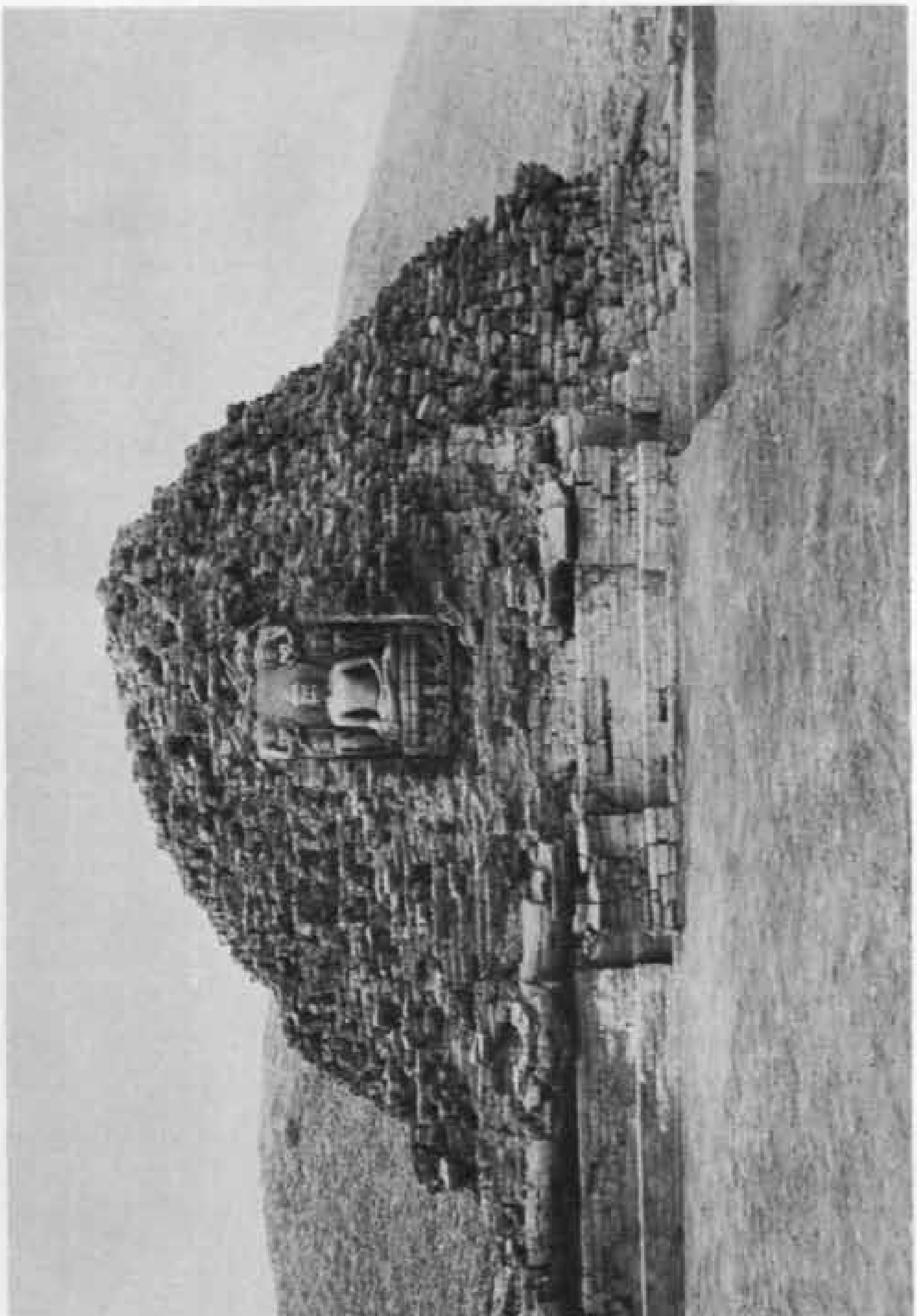
Lalitgiri: partially exposed stupa. *See p. 63*



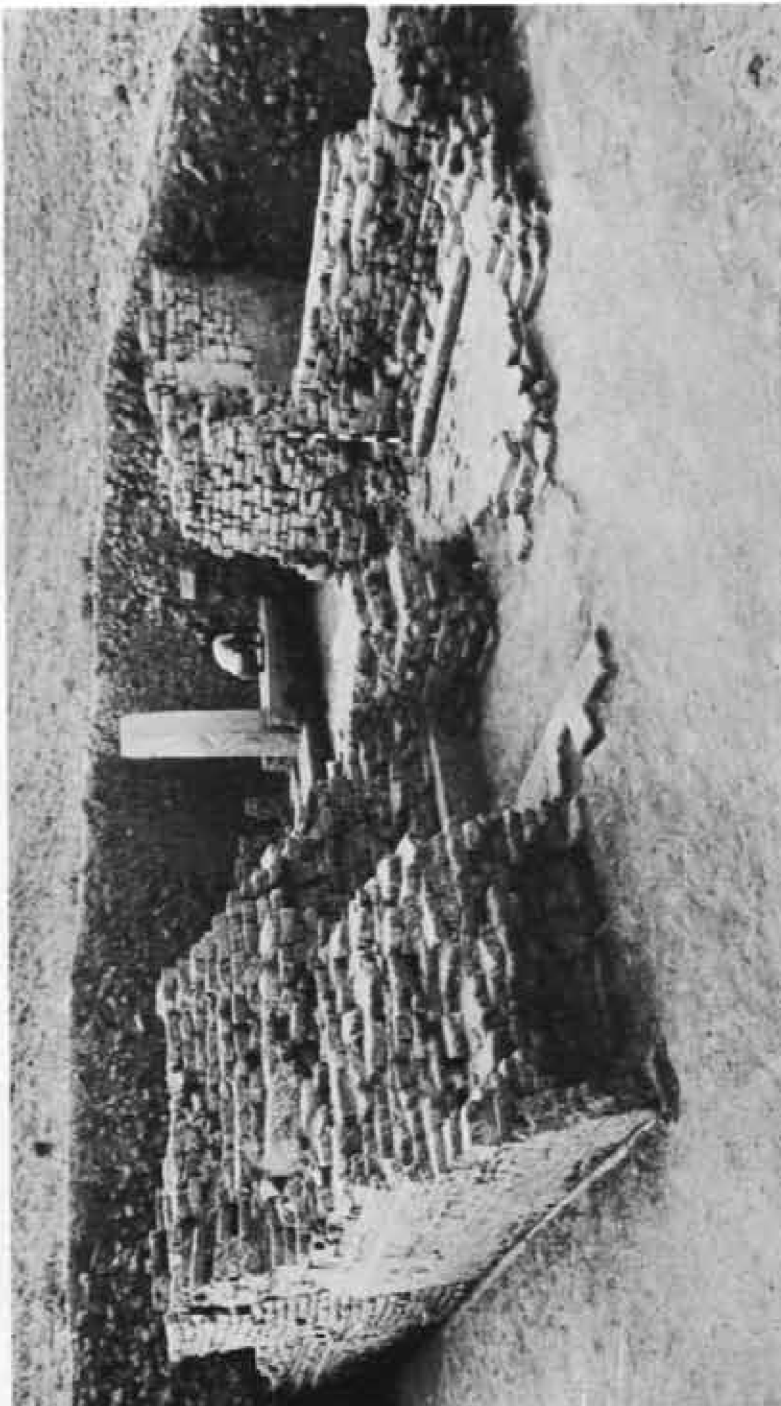
A. *Lalitgiri: relic caskets. See p. 63*



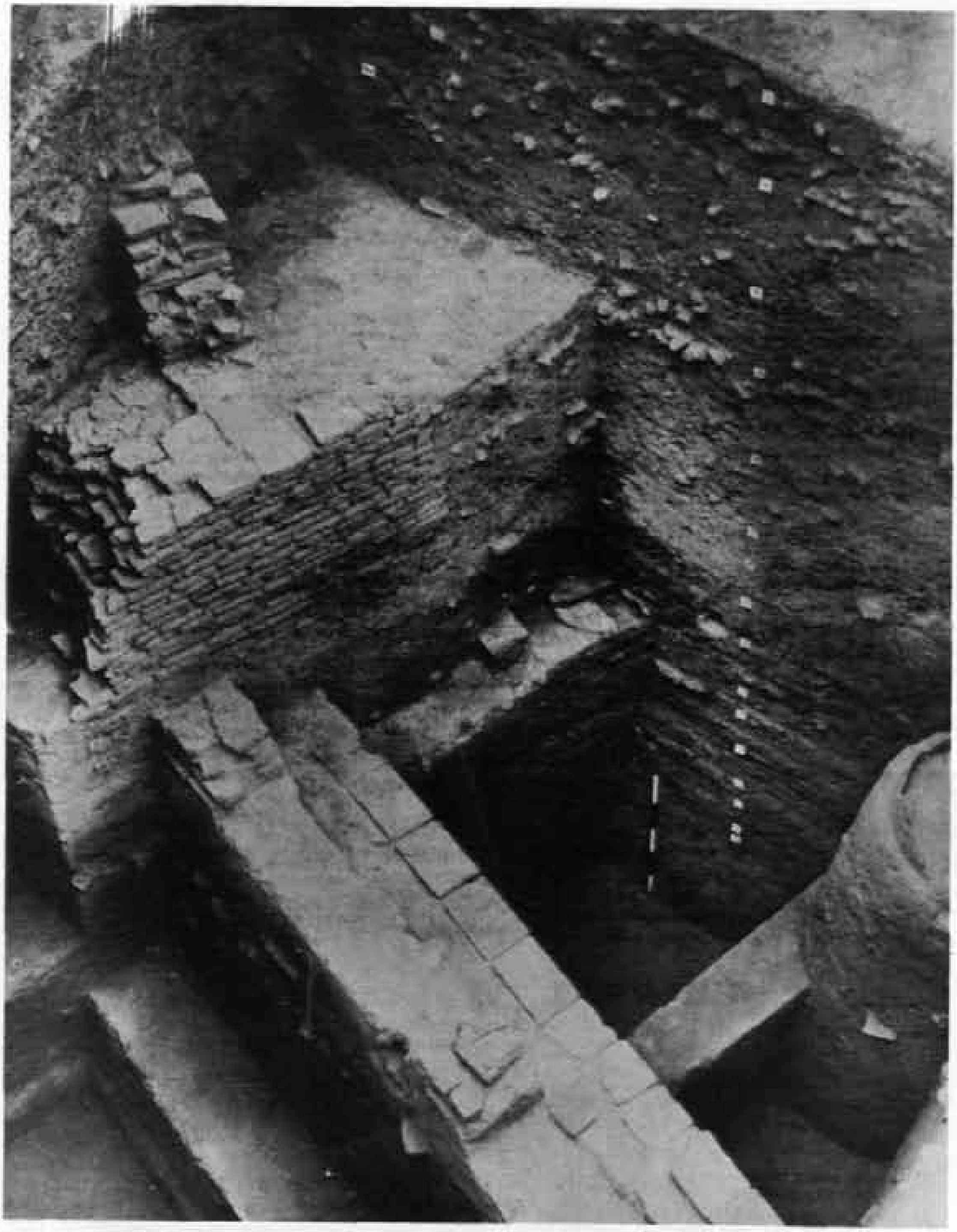
B. *Lalitgiri: relic caskets. See p. 63*



Udaigiri: view of the stupa showing southern façade. *See p. 64*



Udaigiri: exposed structures. *See p. 64*



Sanghol: structural phases, Kushana period. See p. 67



Sanghol: stupa, Kushana period. See p. 69



Sanghol: terracotta human figurines, Kushana period. *See p. 69*



Sanghol: sealings, Kushana period See p. 69



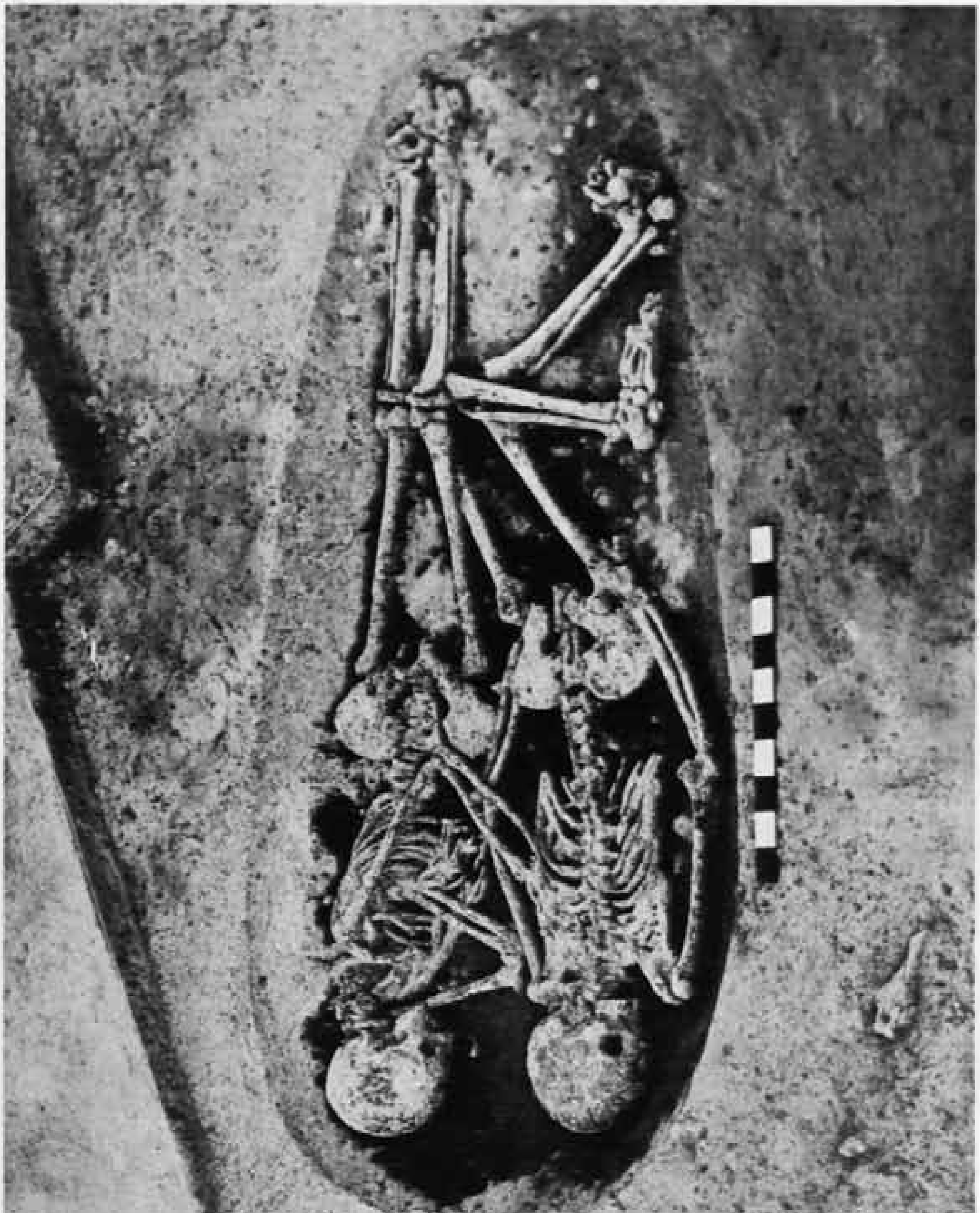
Fatehpur Sikri: gold foil. *See p. 74*



A. *Jakhera: circular mud house. See p. 80*



B. *Jakhera: terracotta ram. See p. 81*



Damdama: double burial. See p. 83



Ballal Dhipi: exposed structures. *See p. 89*



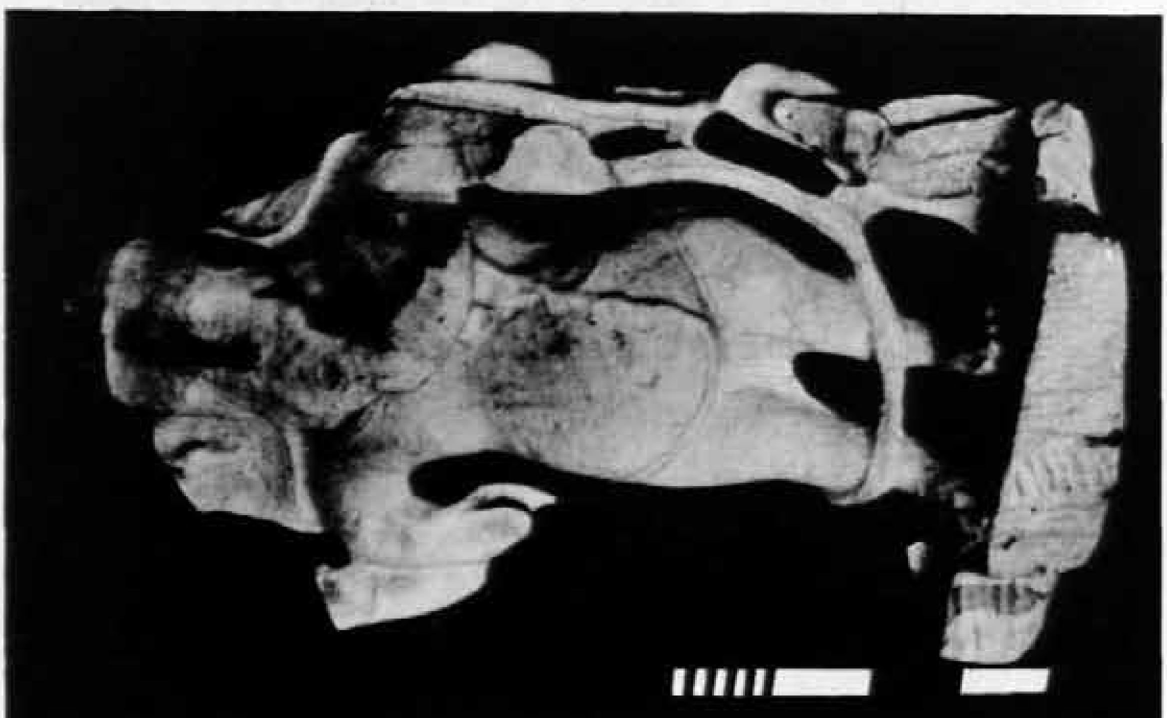
Ballal Dhipi: stucco heads. See p. 90



A. *Shahpur: Nagari inscription. See p. 92*



B. *Delhi: inscription of Balbana. See p. 101*



A. Jammu: mutilated Ganesa. See p. 108



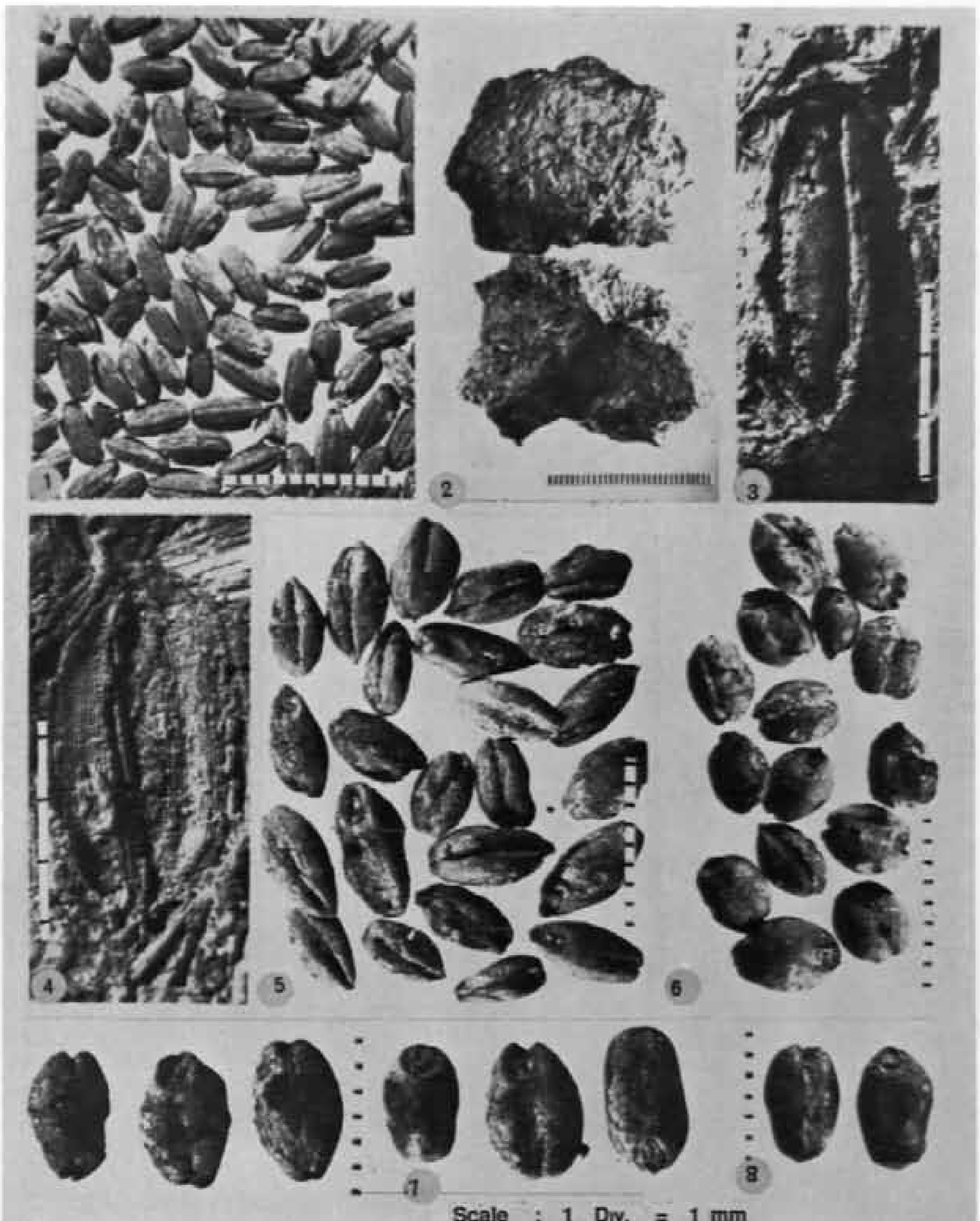
B. Apati: rock-cut Maitreya. See p. 109



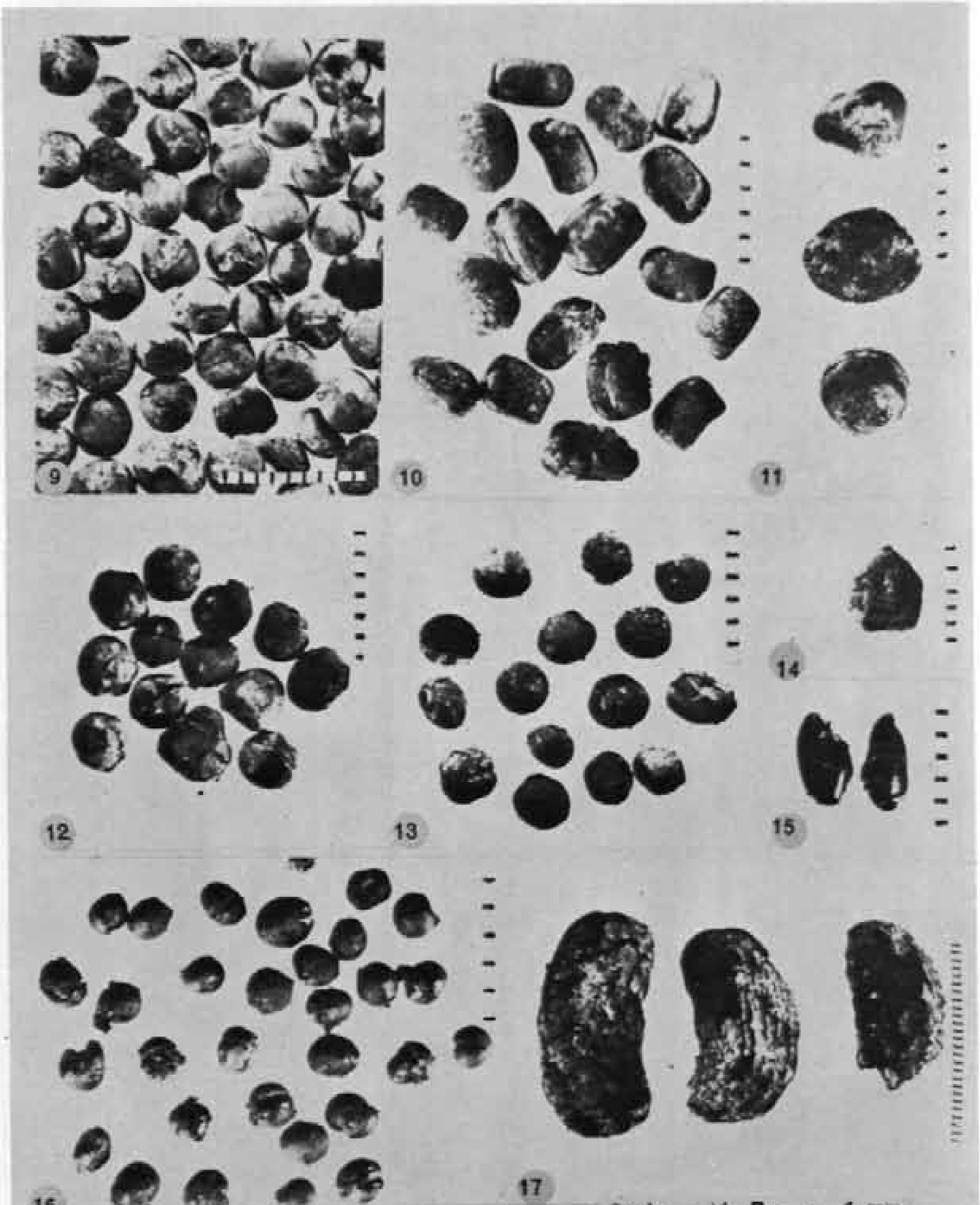
Kiramchi: Medieval sculpture. See p. 109



Sundarsi: pedestal of an image. *See p. 111*



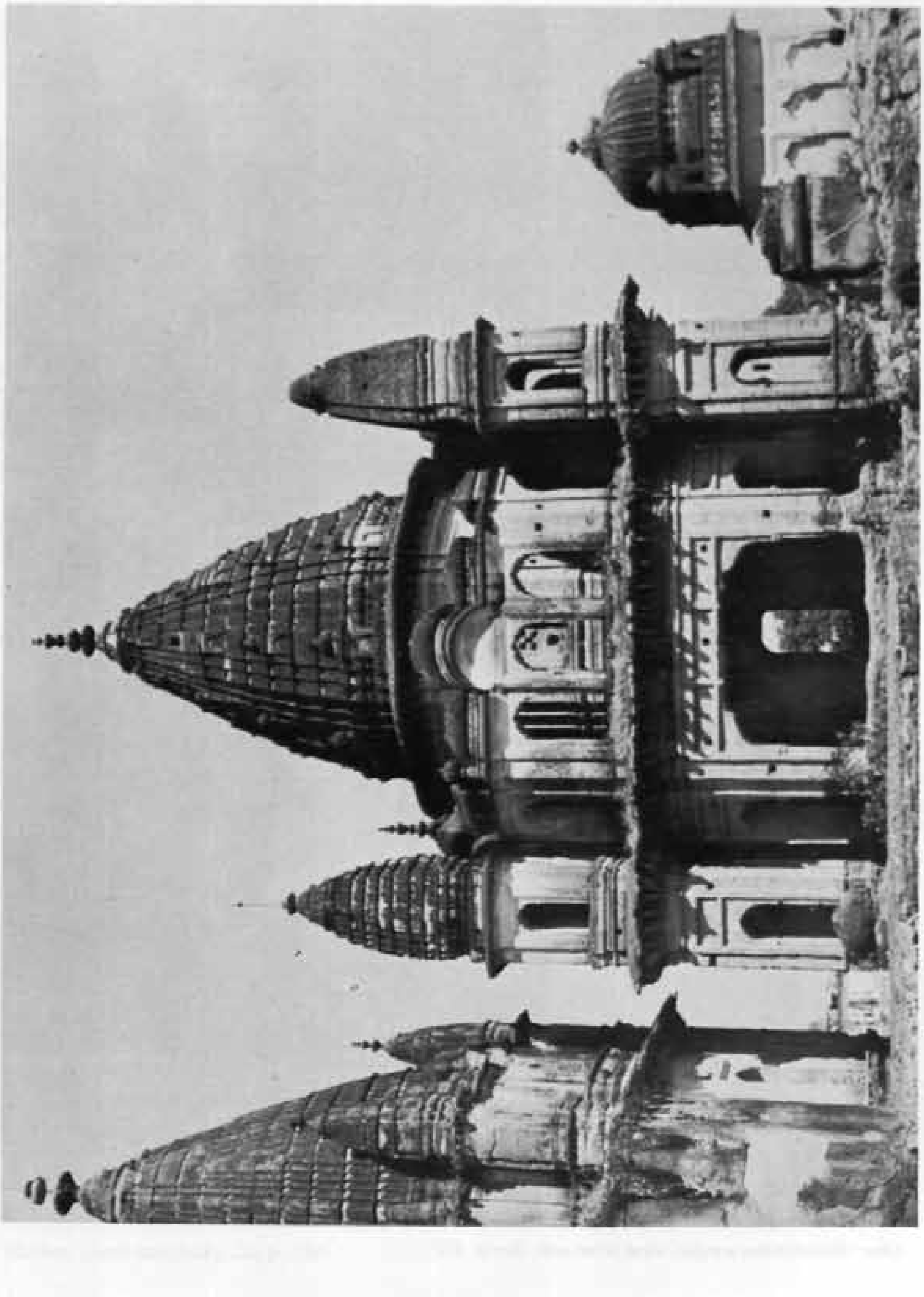
Narhan: seeds and fruits. See p. 123



Narhan: seeds and fruits. See p. 123



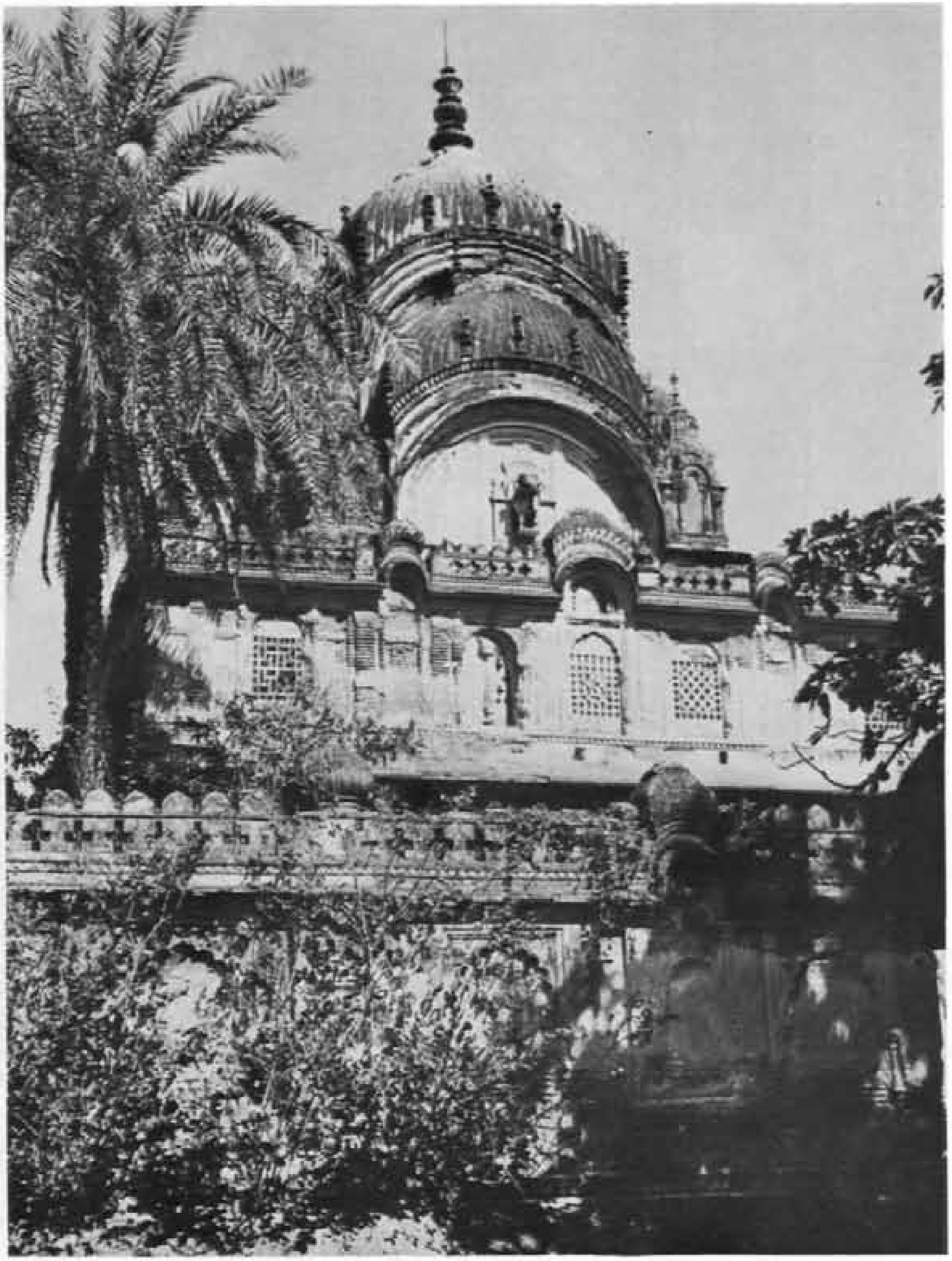
Khor: Navatorana temple, view from east. See p. 132



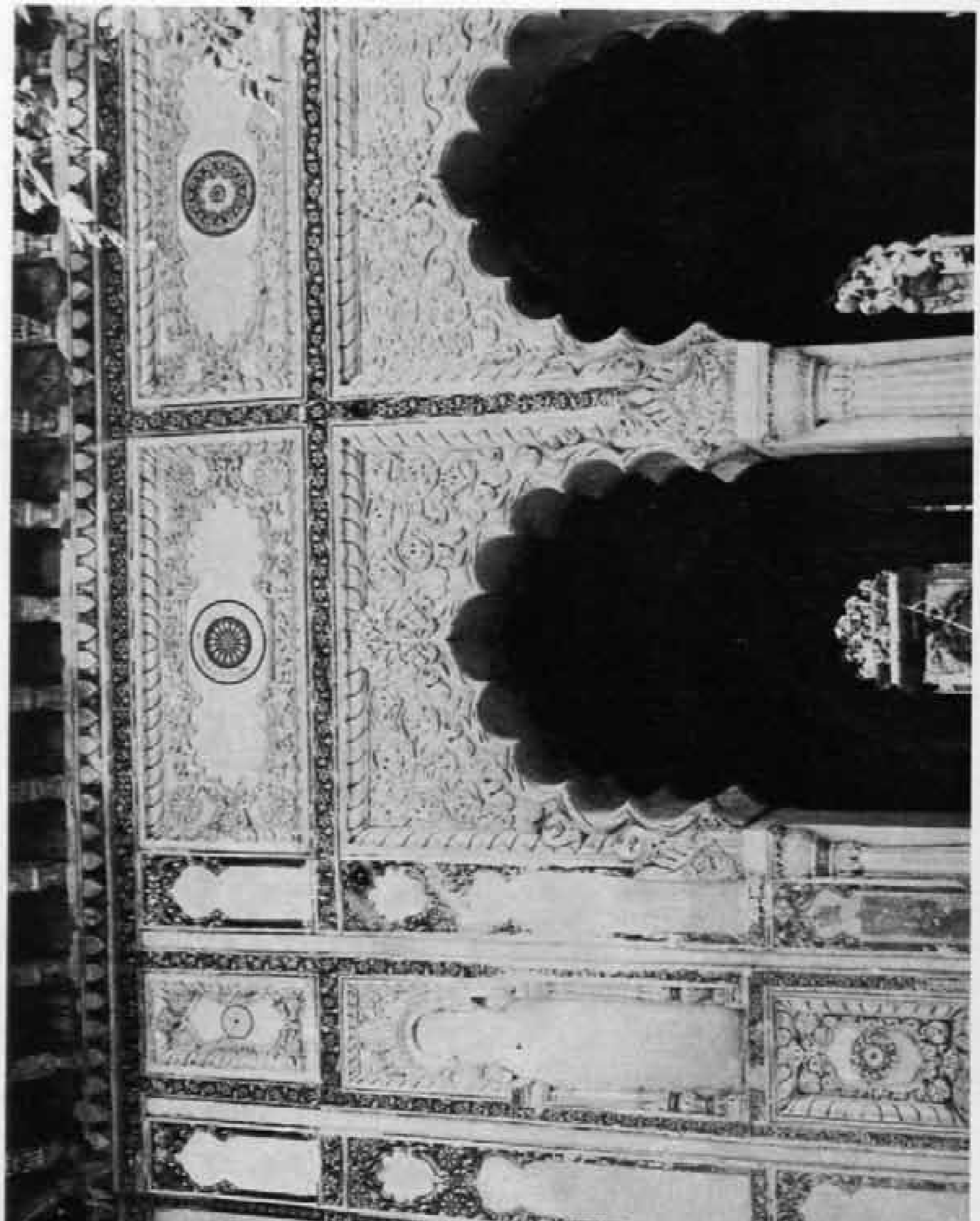
Datia: general view of samadhi. *See p. 148*



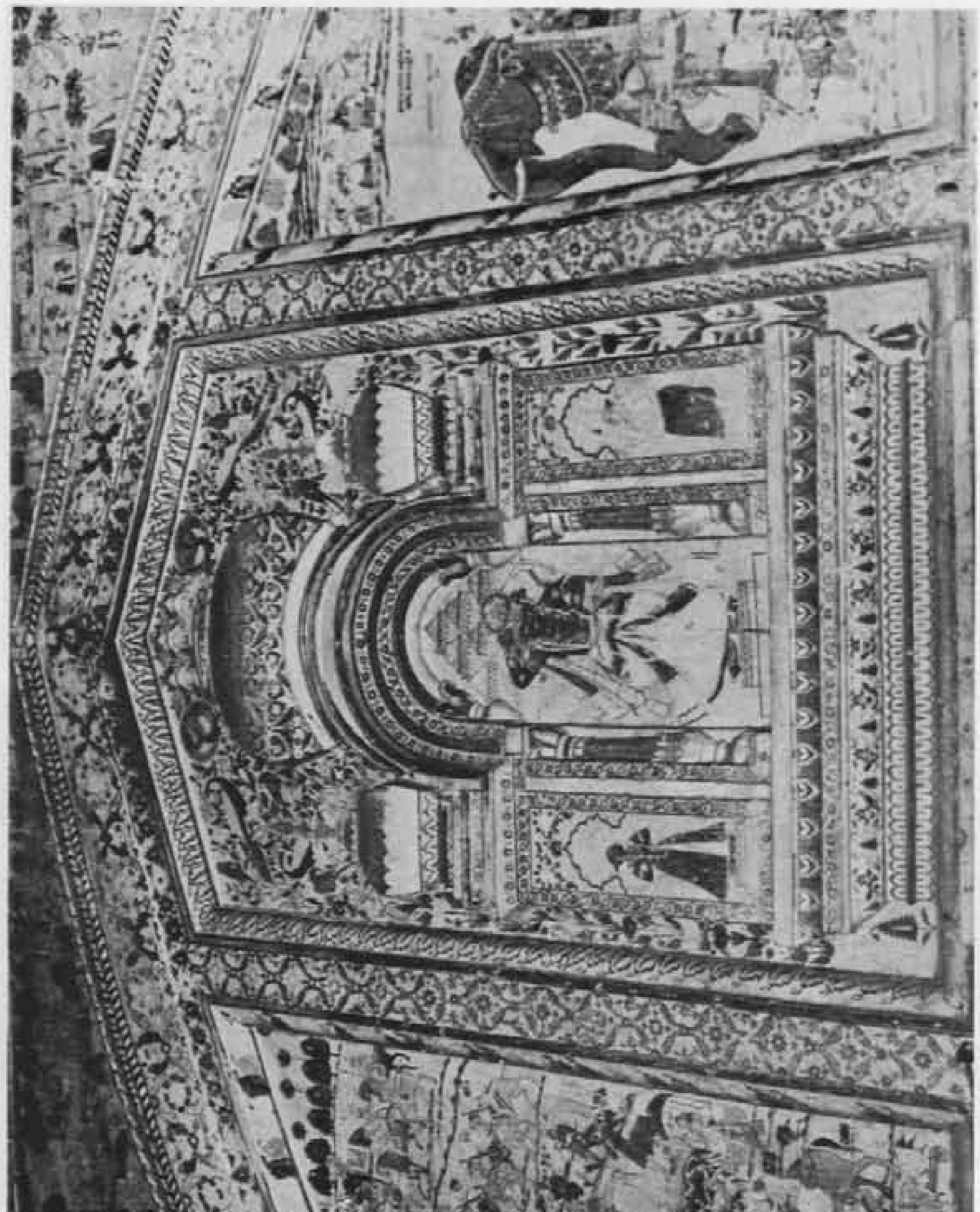
Datia: gateway of samadhi. *See p. 148*



Datia: samadhi of Vijay Bahadur Singh. See p. 148



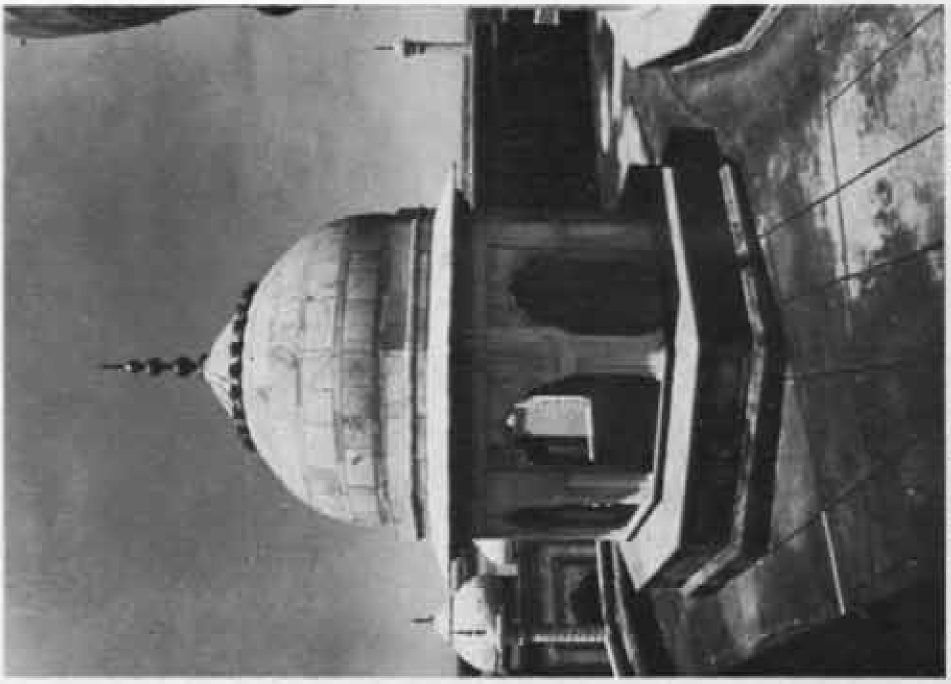
Datia: decorative panels. *See p. 148*



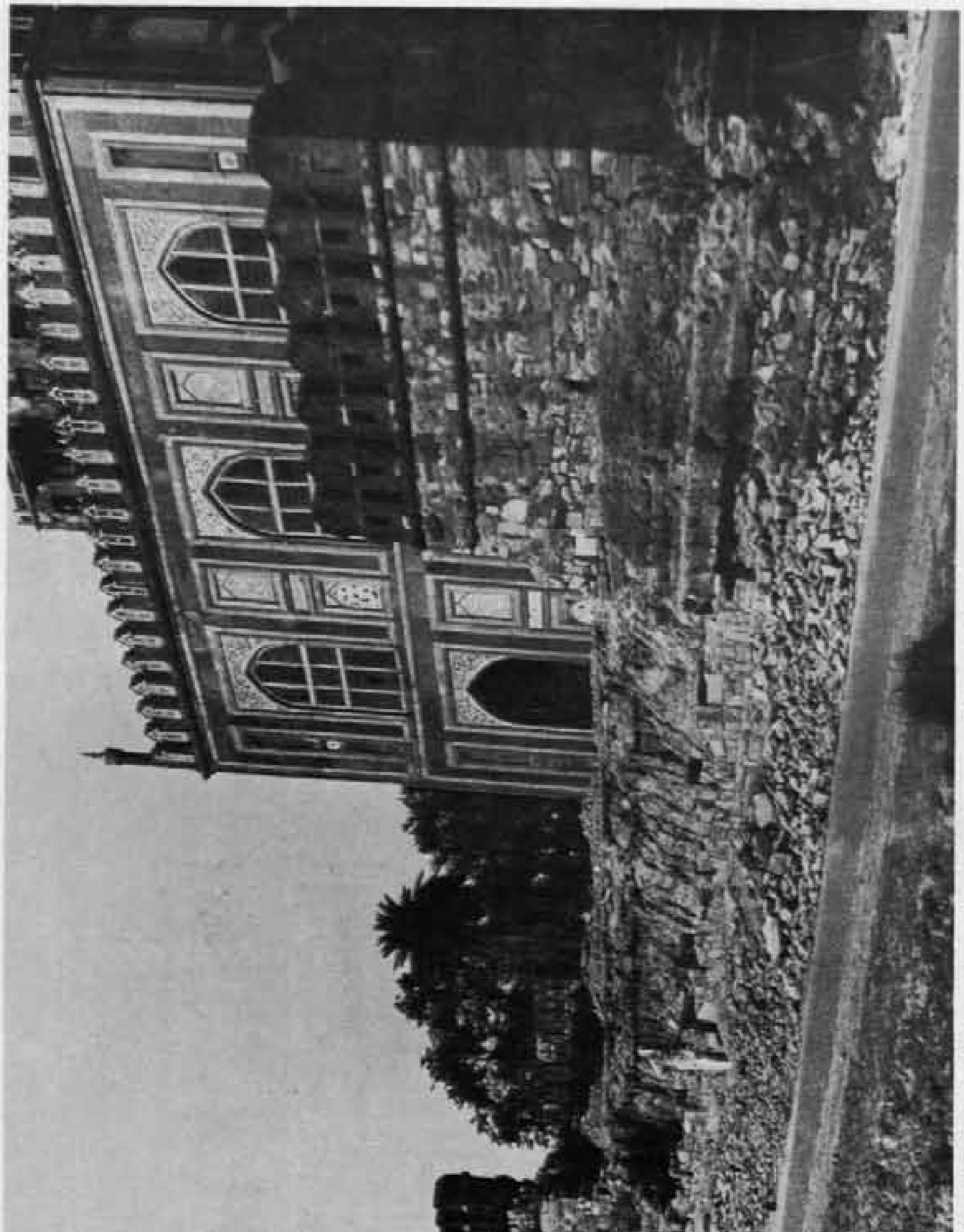
Datia: painted panels. *See p. 148*



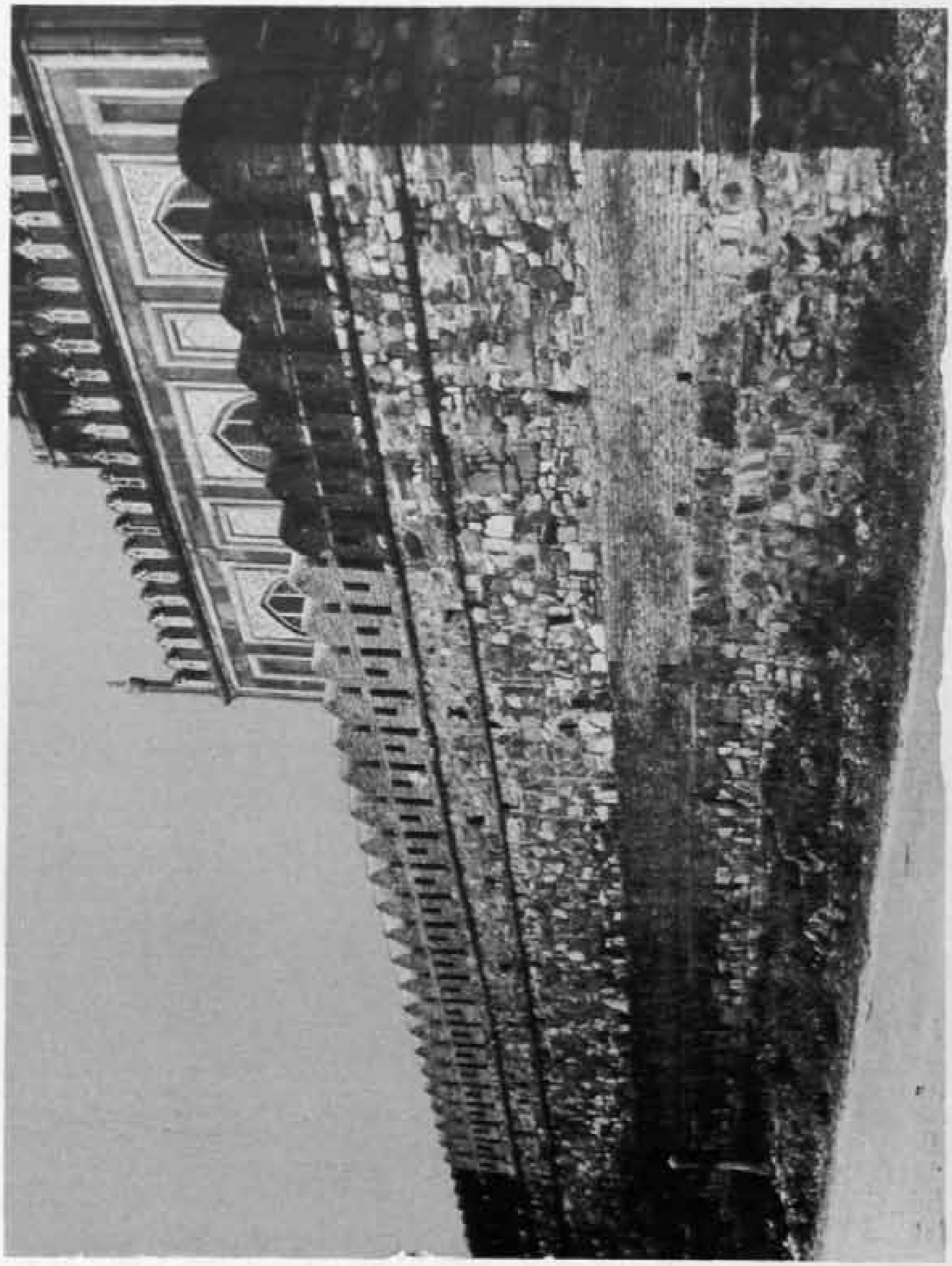
A. Agra: Taj Mahal, before watertightening of the roof.
See p. 151



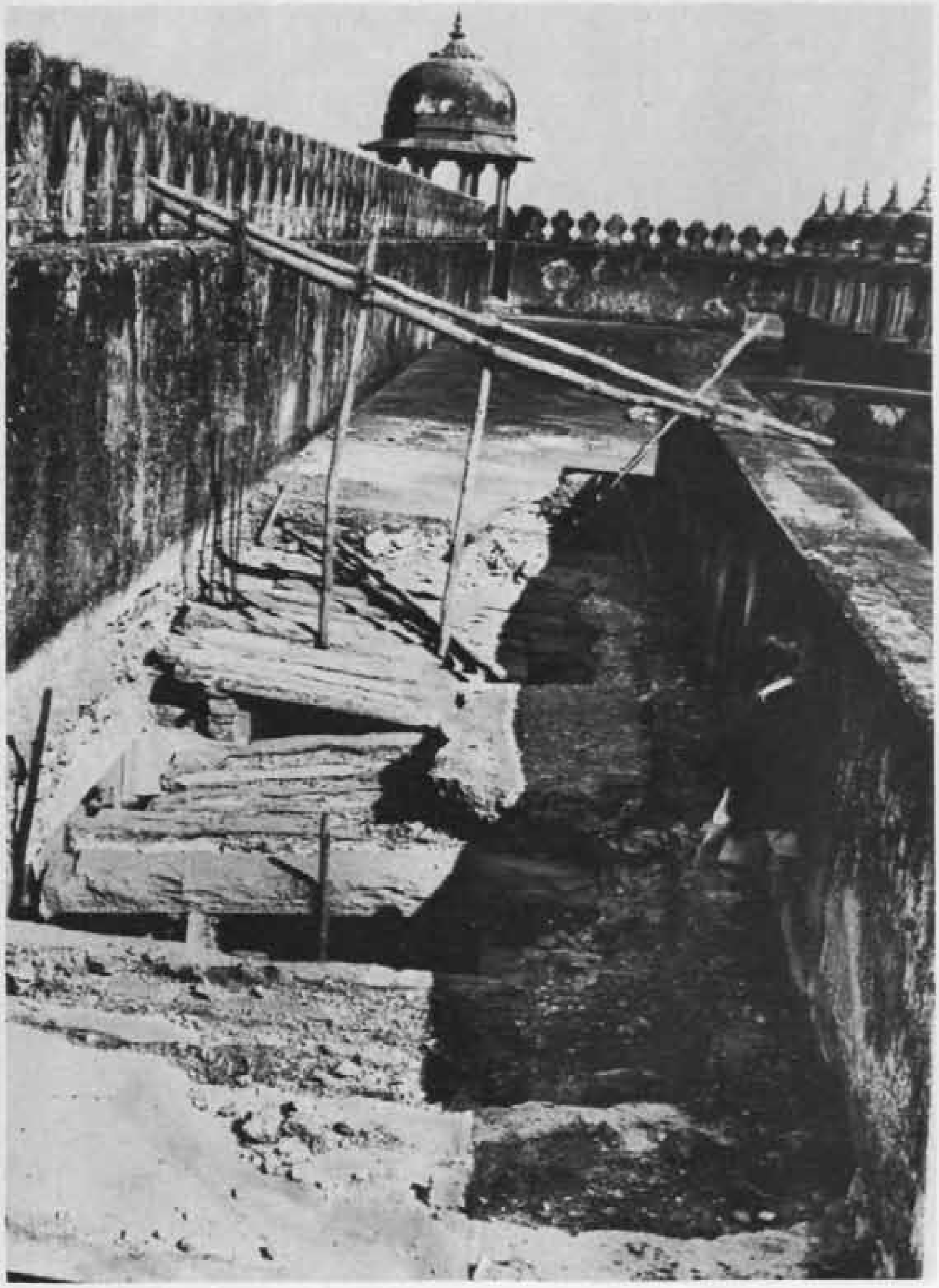
B. Agra: Taj Mahal, after watertightening of the roof.
See p. 151



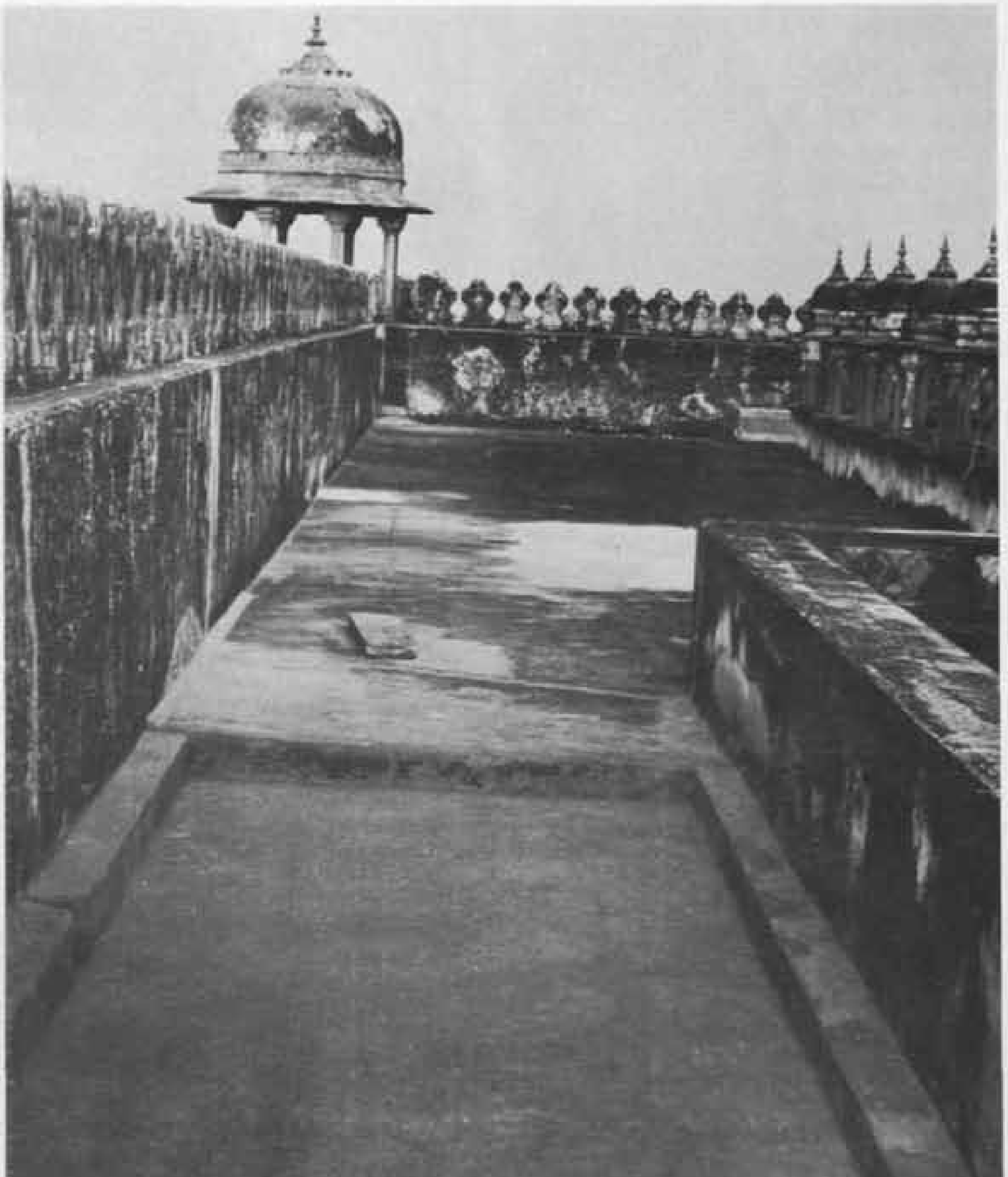
Sikandra: Akbar's tomb, before restoration of enclosure wall. *See p. 152*



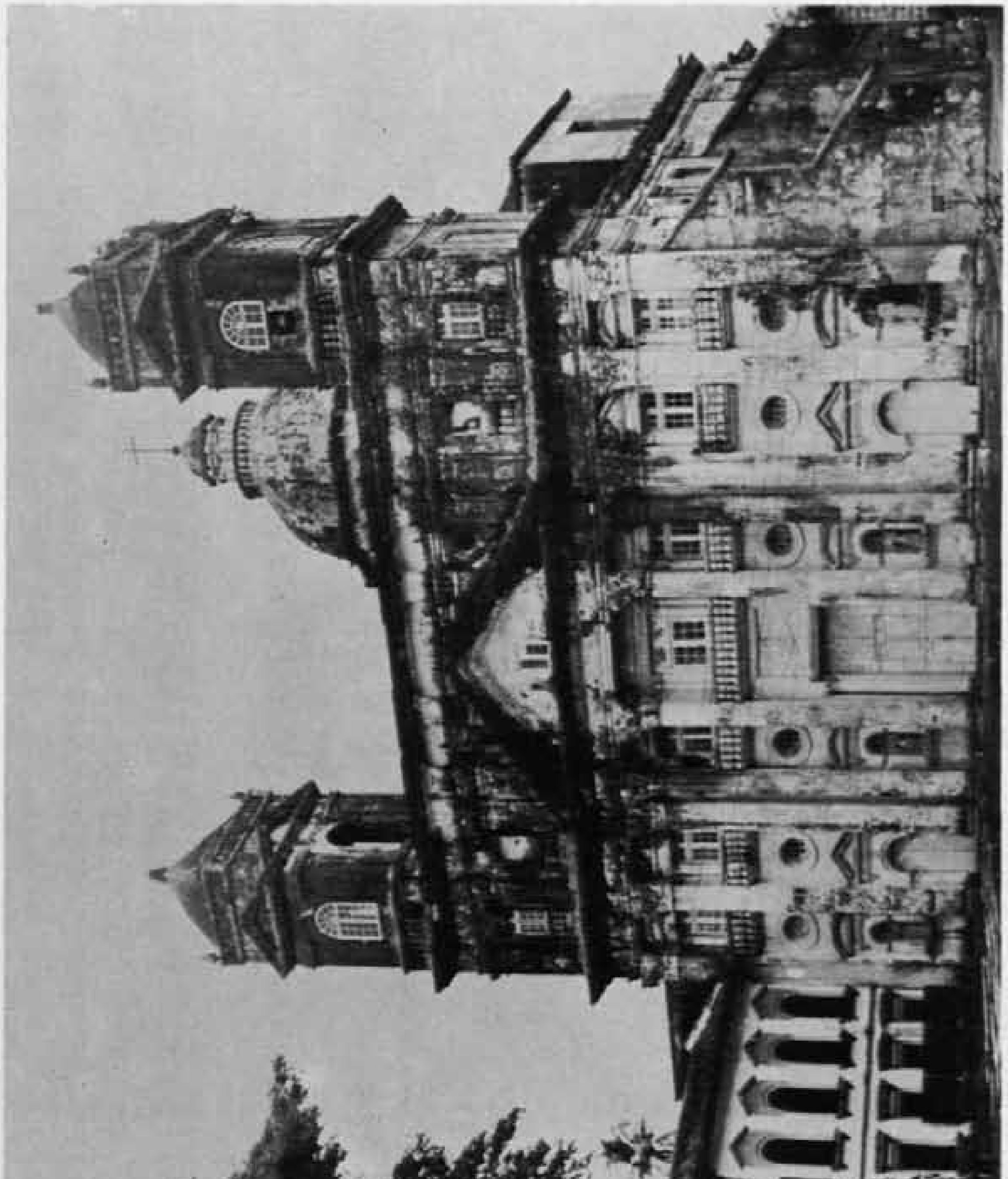
Sikandra: Akbar's tomb, after restoration of enclosure wall. *See p. 152*



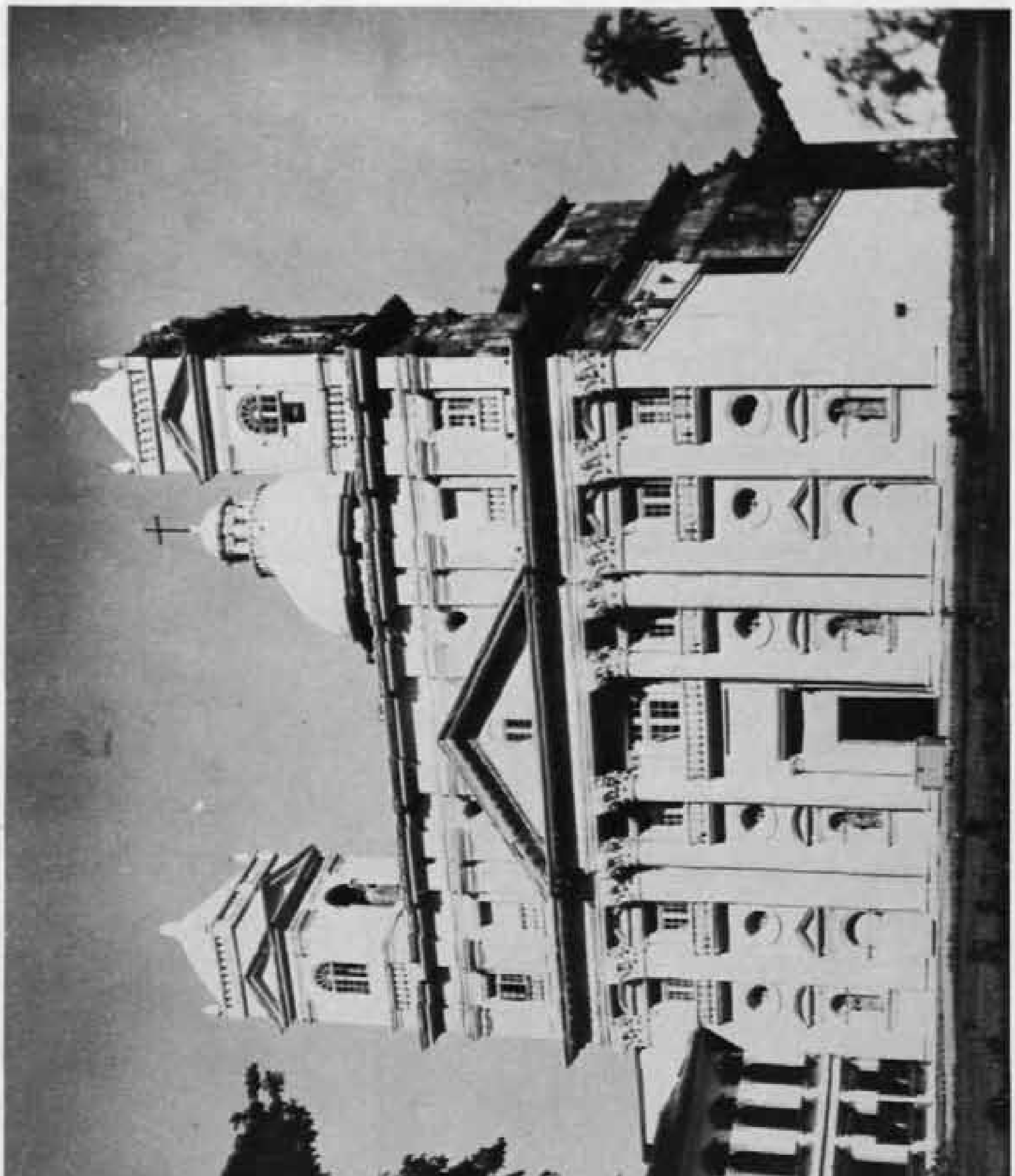
Fatehpur Sikri: before conservation of the roof of Zanana Rouza. See p. 152



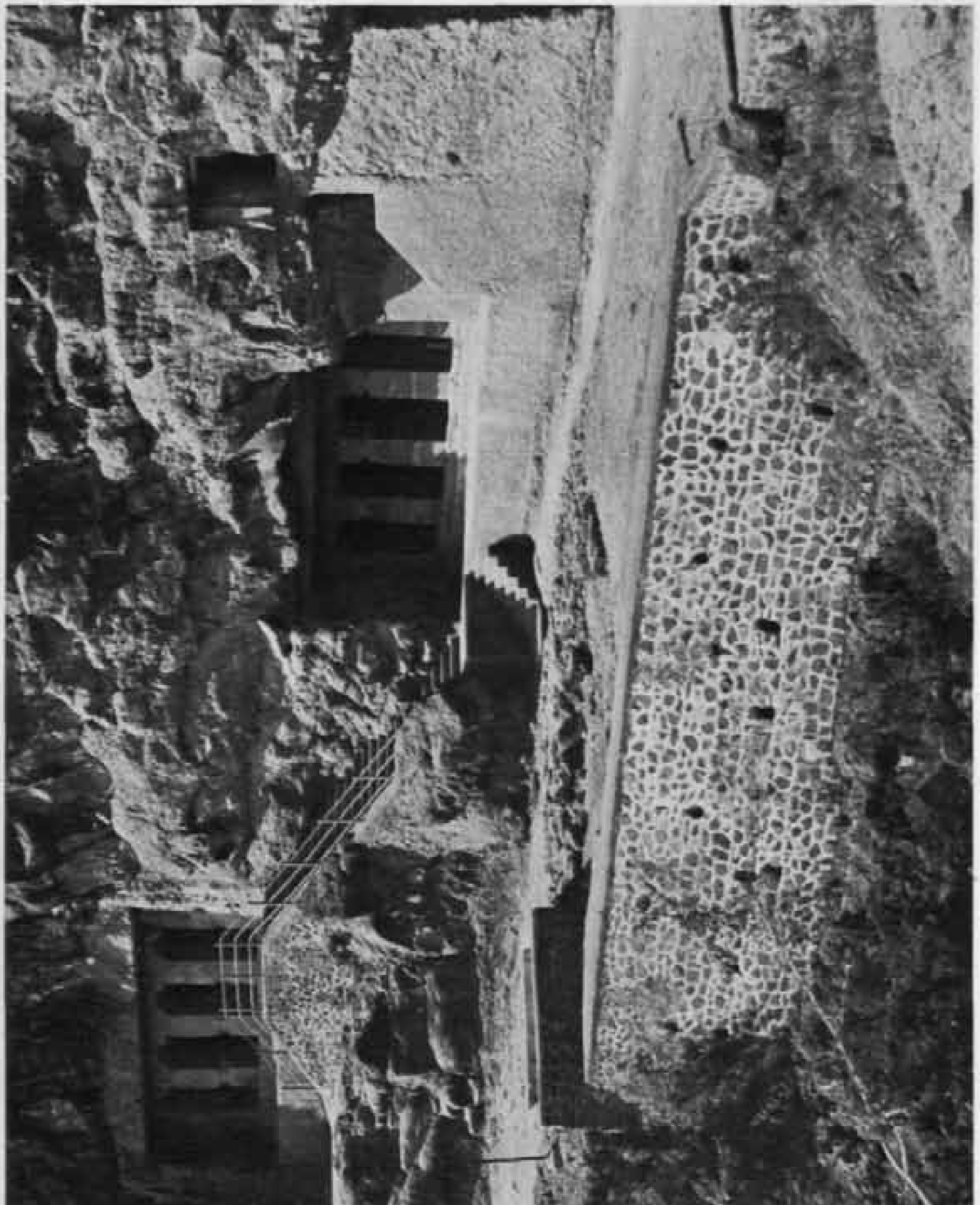
Fatehpur Sikri: after conservation of the roof Zenana Rouza. See p. 152



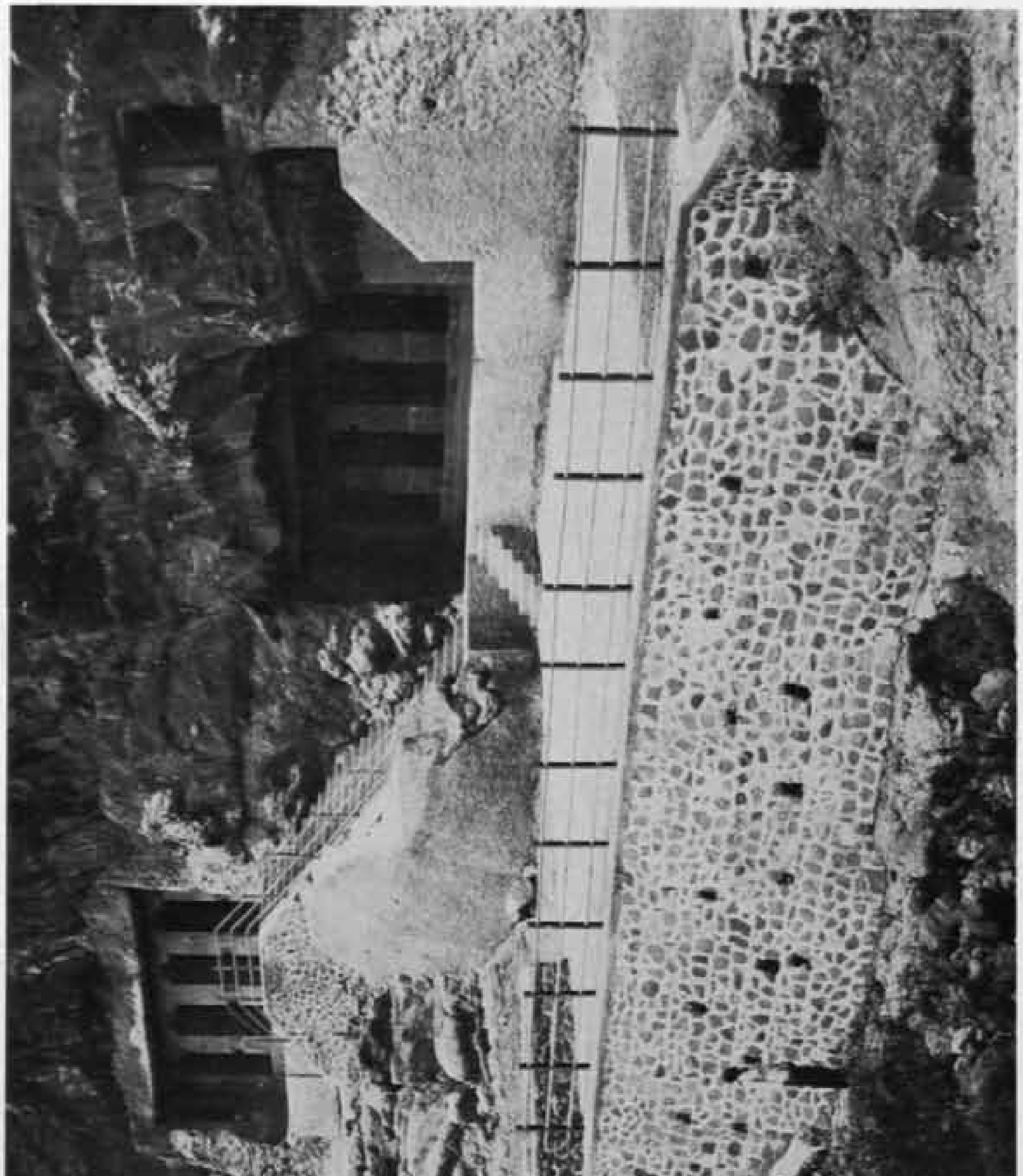
Velha Goa: St. Cajetan Church, before conservation of façade. See p. 154



Valha Goa: St. Cajetan Church, after conservation of façade. See, p. 154



Aurangabad: cave 7, before concreting the courtyard. *See p. 154*



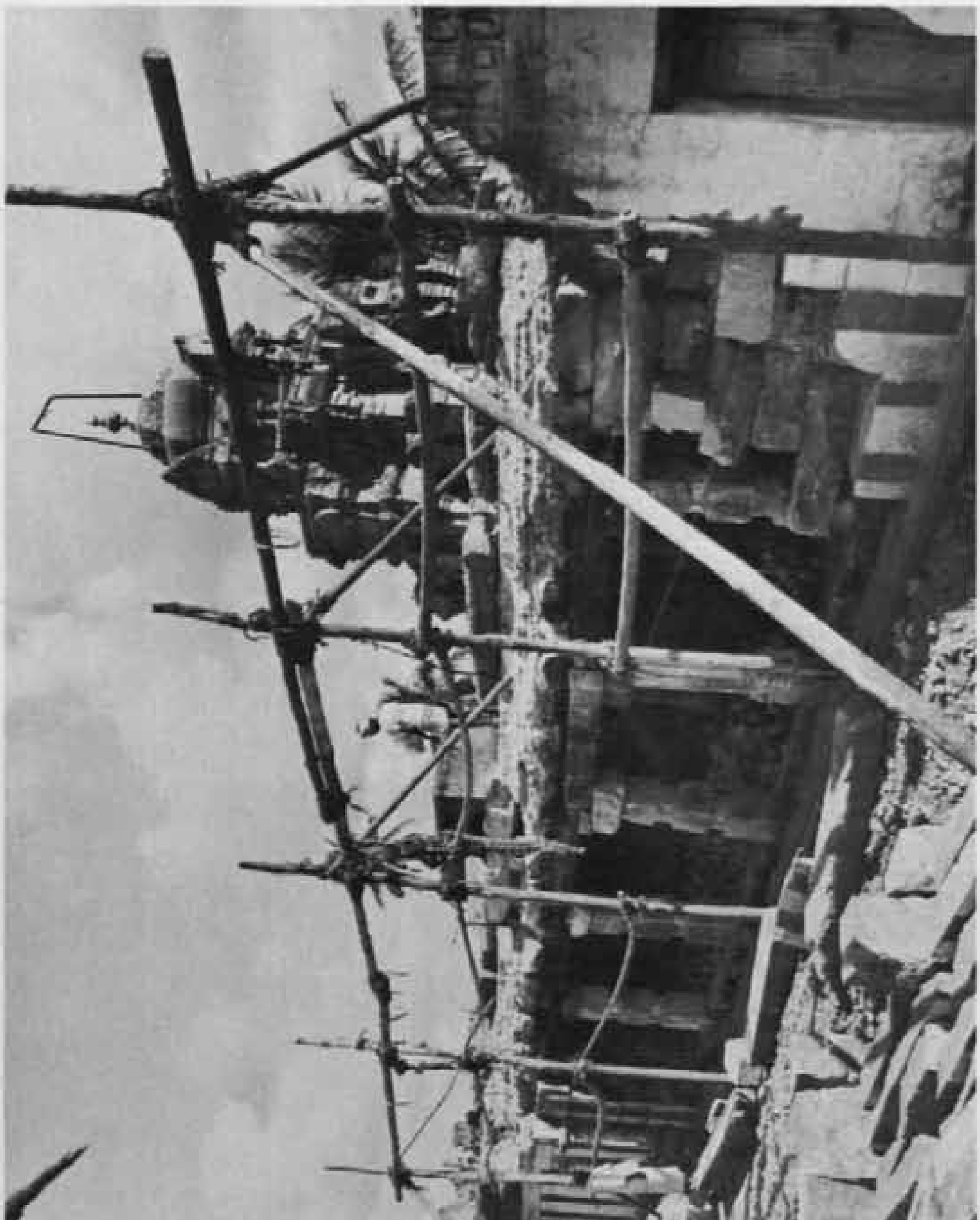
Aurangabad: cave 7, after concreting the courtyard. *See p. 154*



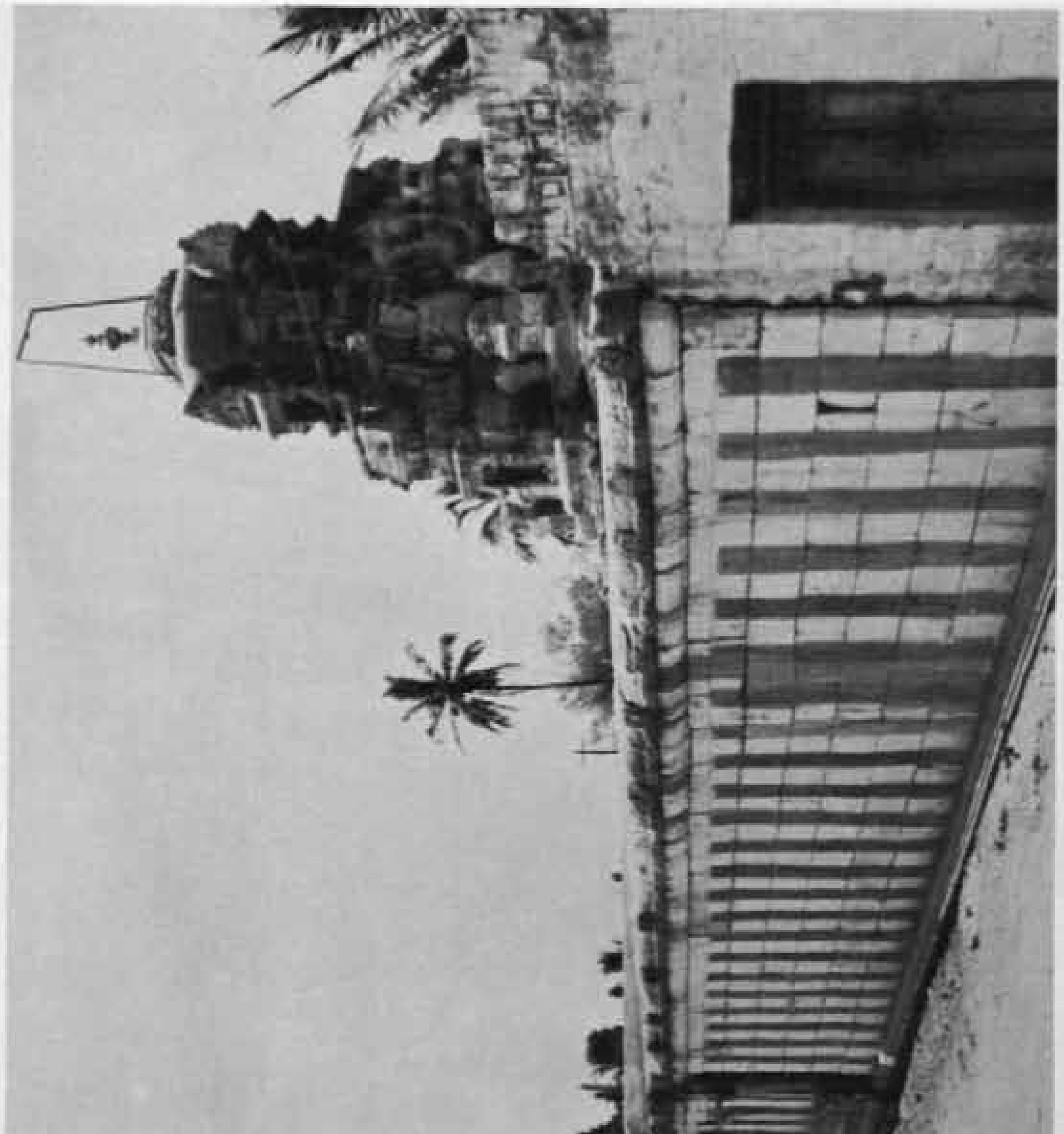
Hirehadagali: Kalleshwara temple, before conservation. *See p. 156*



Hirehadagali: Kalleshwara temple, after conservation. *See p. 156*



Gundlupet: Vijayanarayana temple, before conservation. *See p. 159*



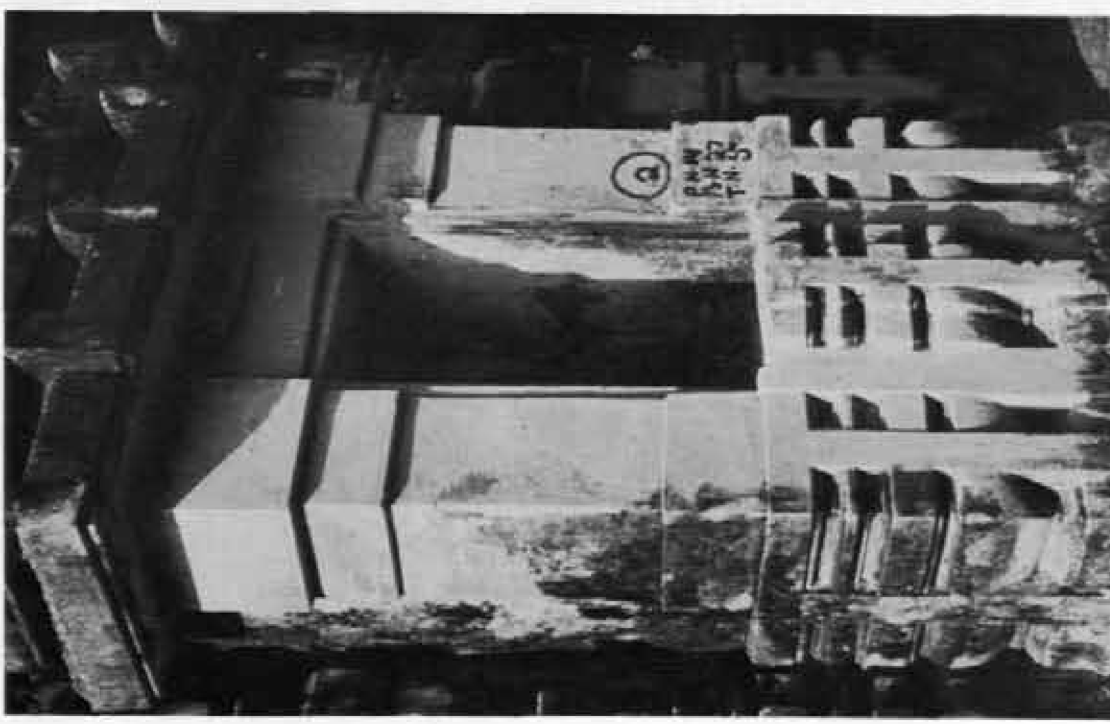
Gundlupet: Vijayanarayana temple, after conservation. See p. 159



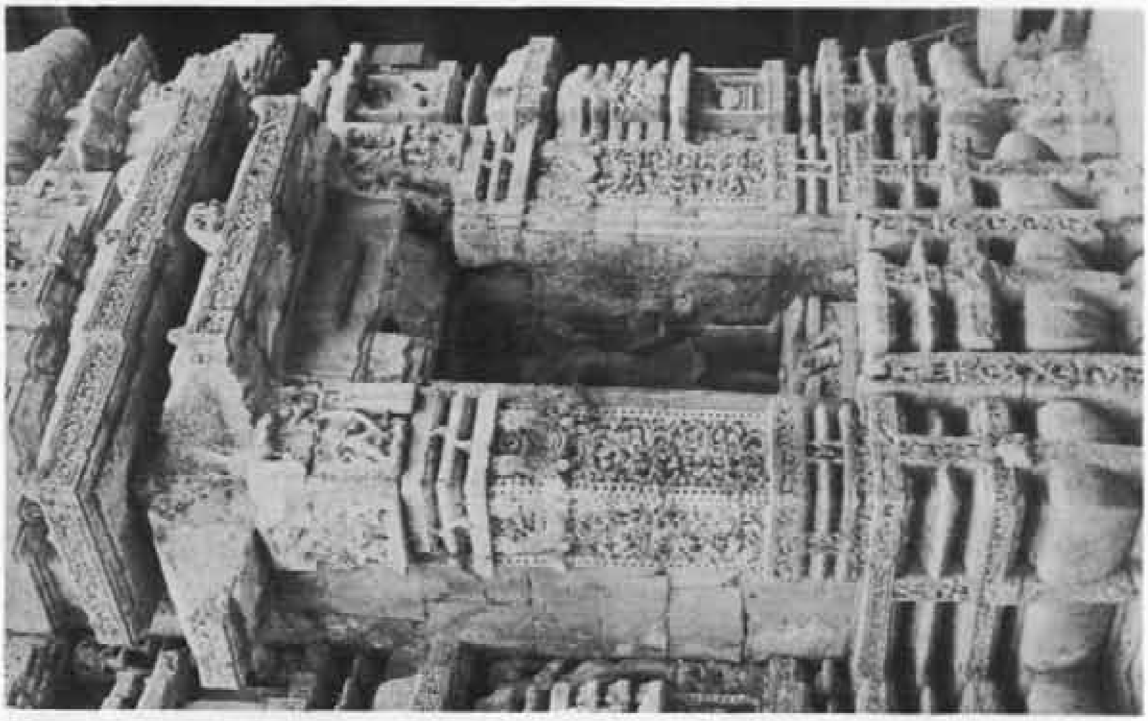
Bagh: rock-cut caves, before conservation. *See p. 160*



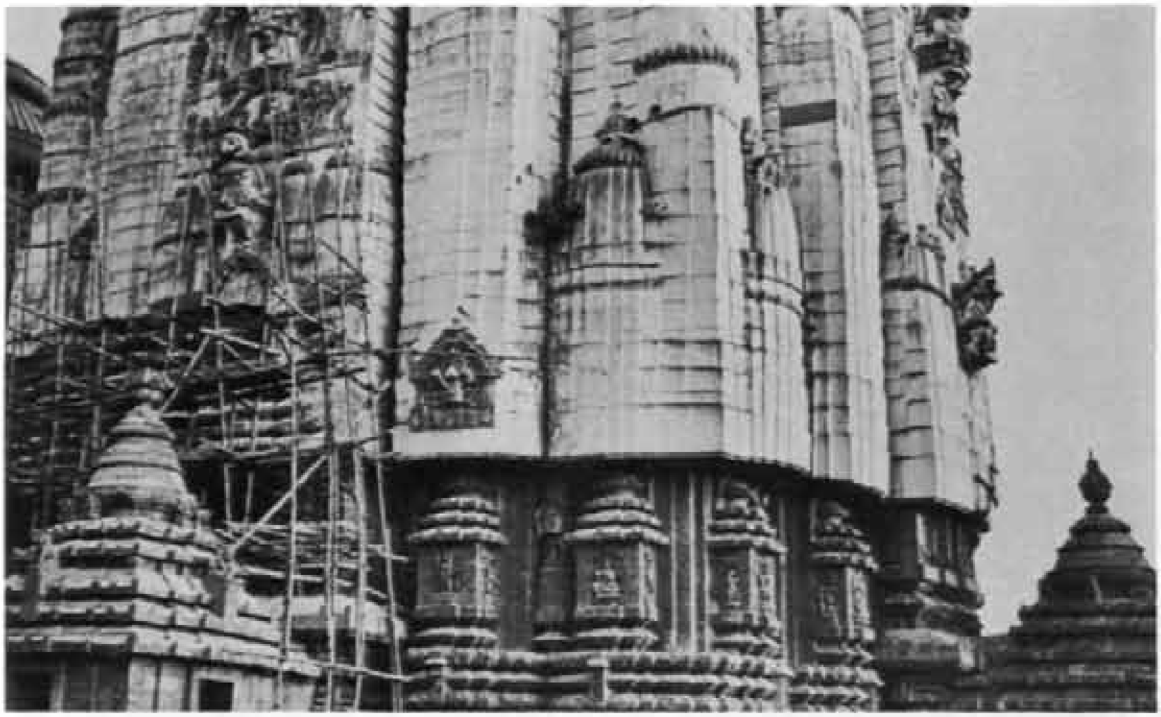
Bagh: rock-cut caves, after conservation. See p. 160



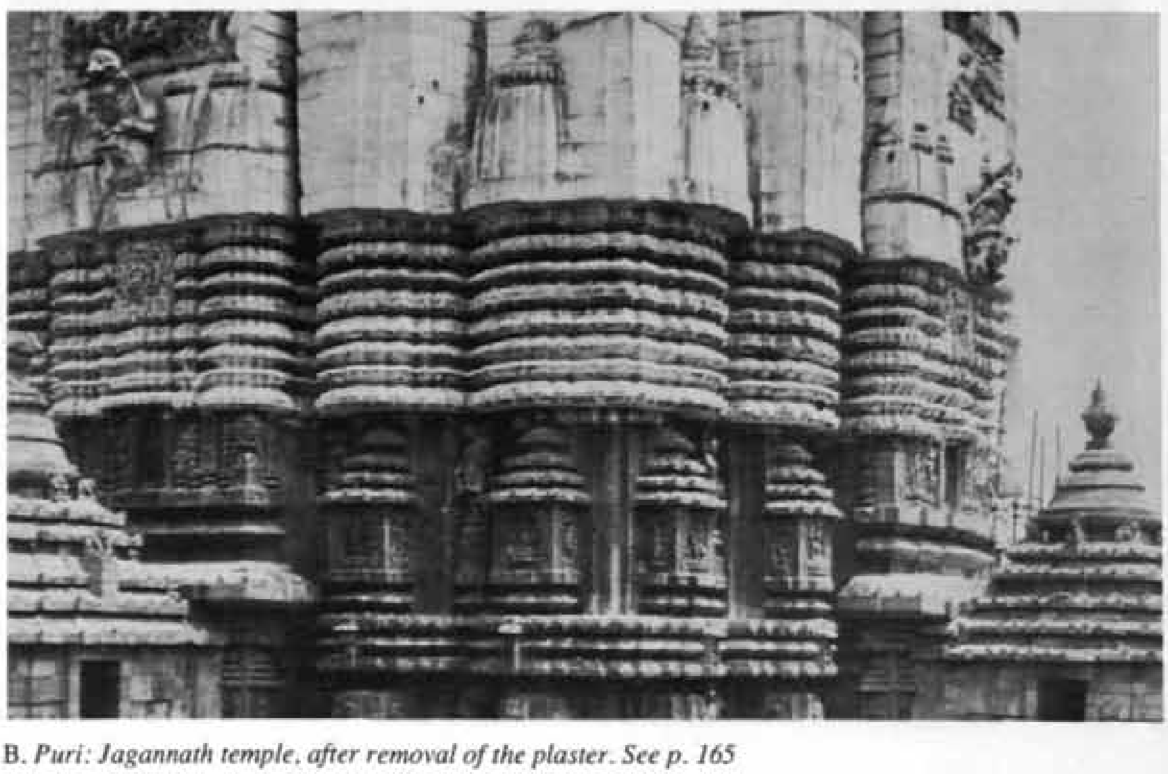
A. *Puri: Narasimha temple, before removal of plaster. See p. 165*



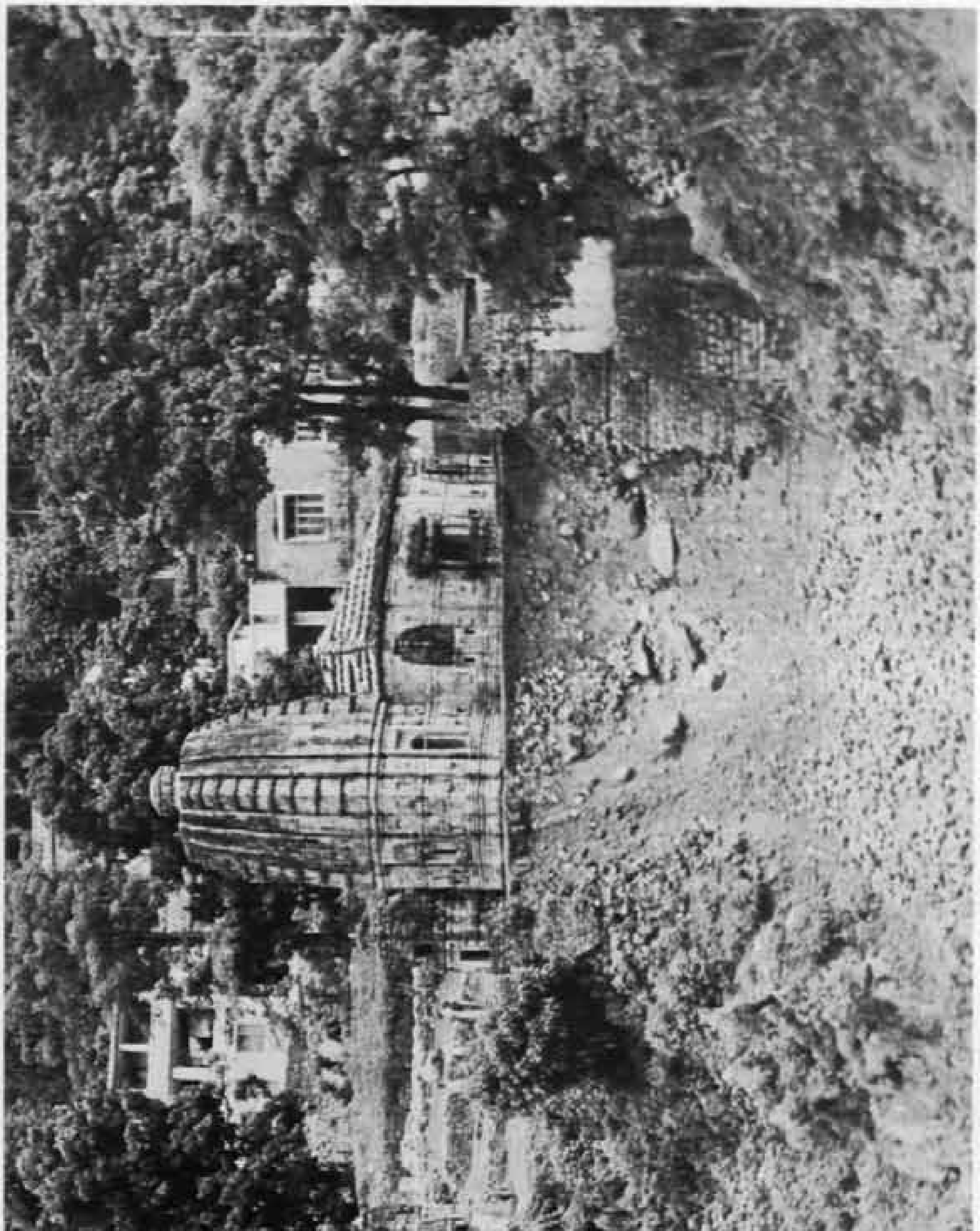
B. *Puri: Narasimha temple, after removal of plaster. See p. 165*



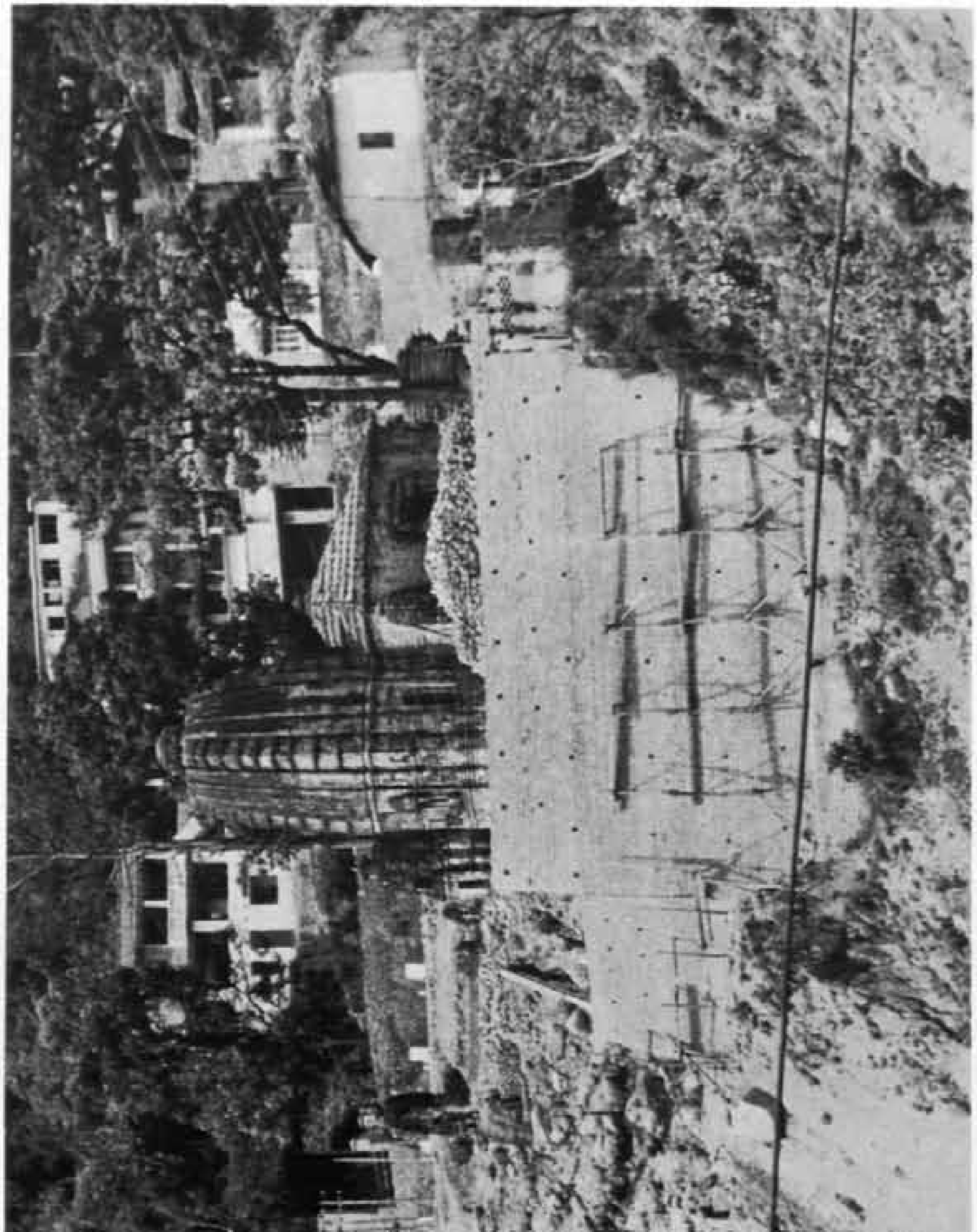
A. *Puri: Jagannath temple, during removal of the plaster. See p. 165*



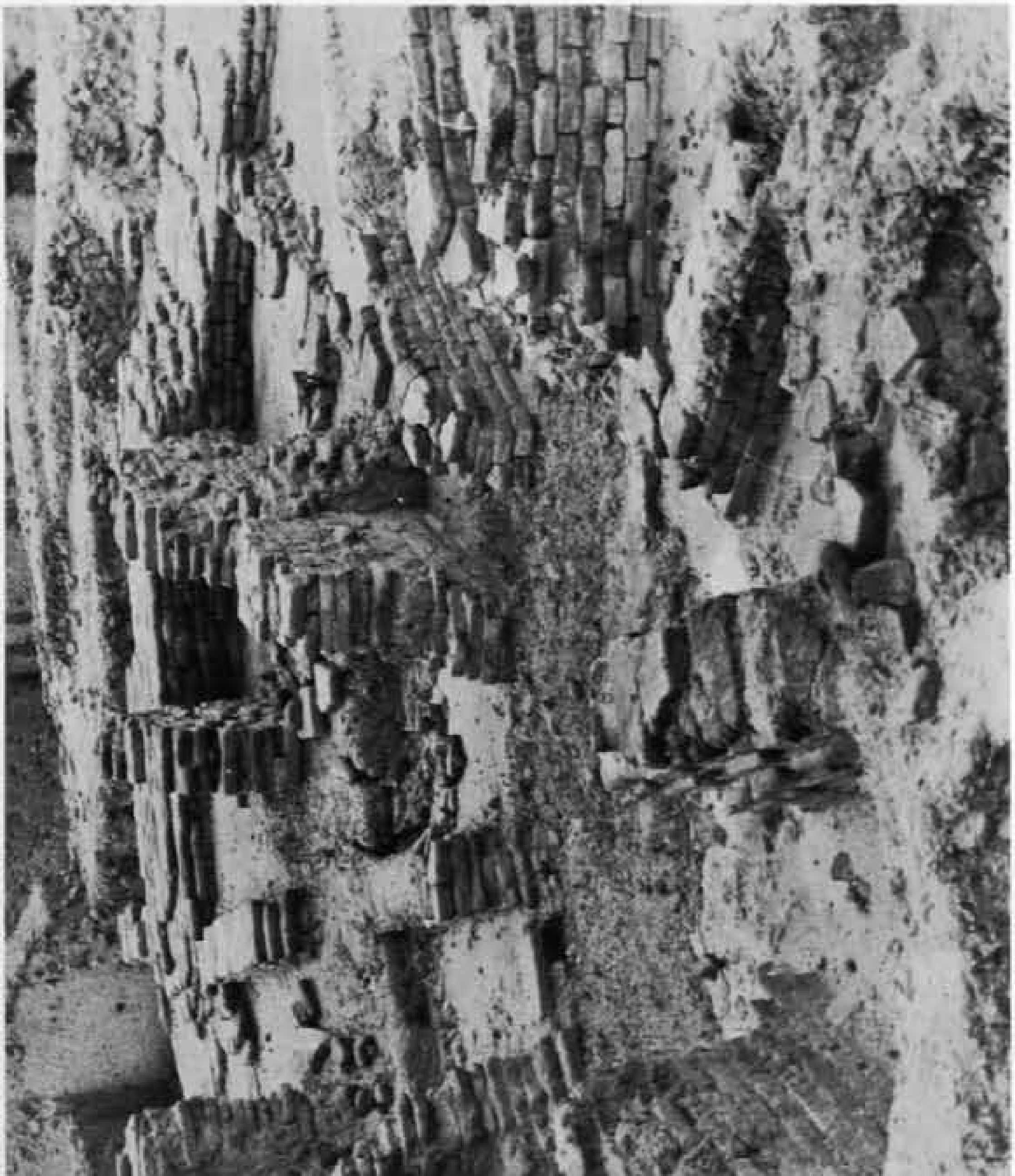
B. *Puri: Jagannath temple, after removal of the plaster. See p. 165*



Mandi: Trilokinath temple, before reconstruction of the retaining wall. *See p. 169*



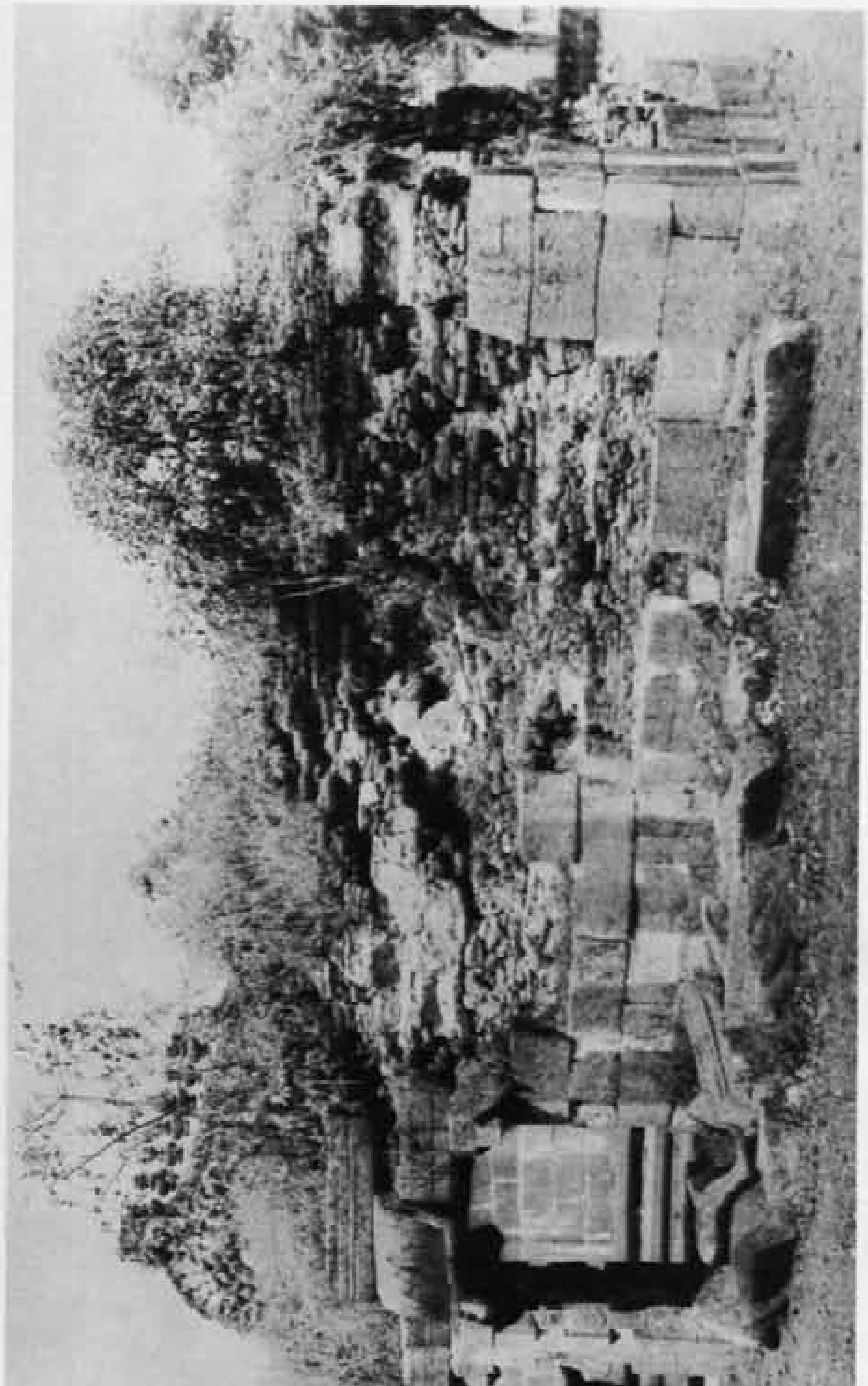
Mandi: Trilokinath temple, during reconstruction of the retaining wall. *See p. 169*



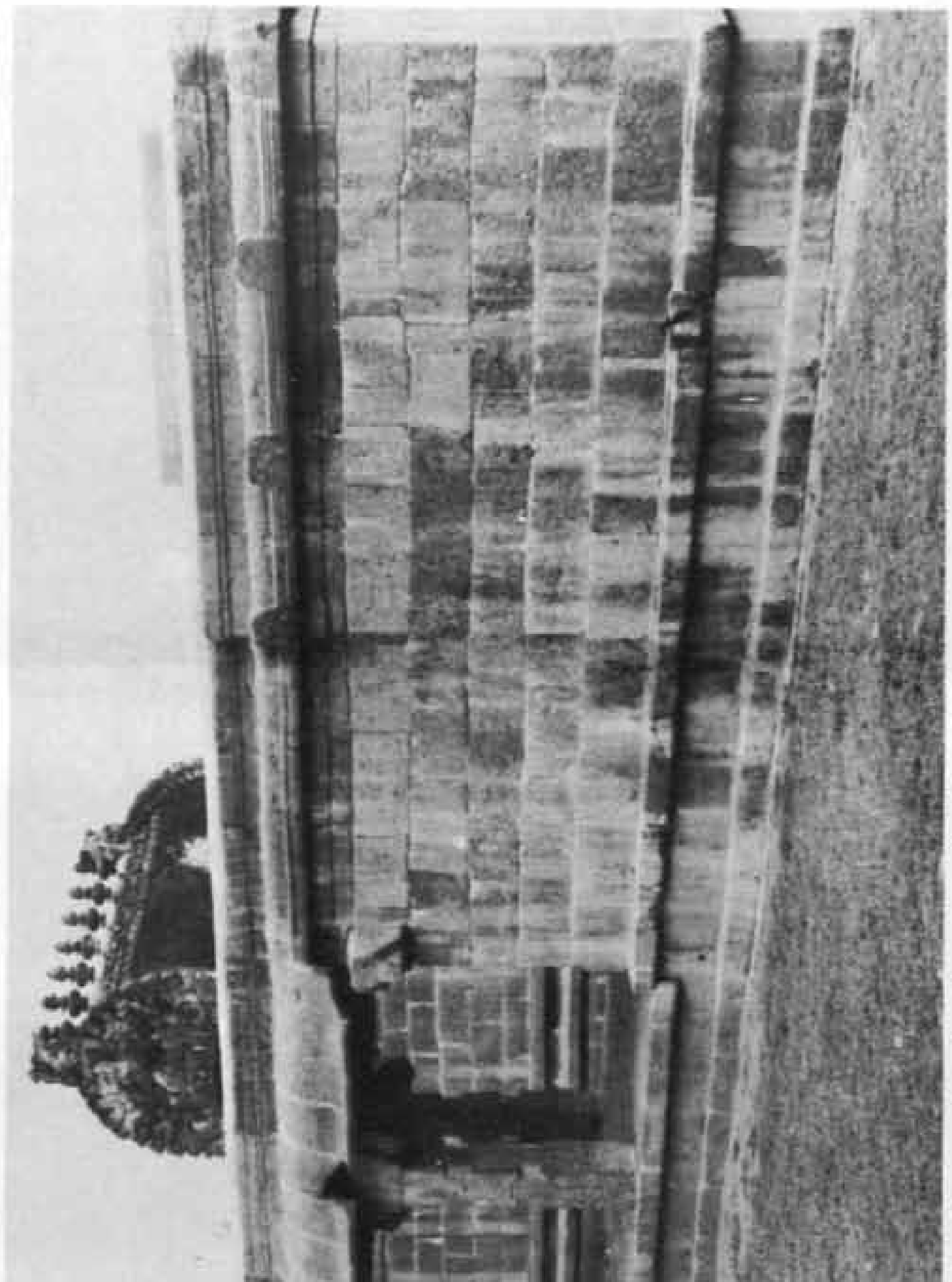
Sanghol: before conservation of the stupa. *See p. 169*



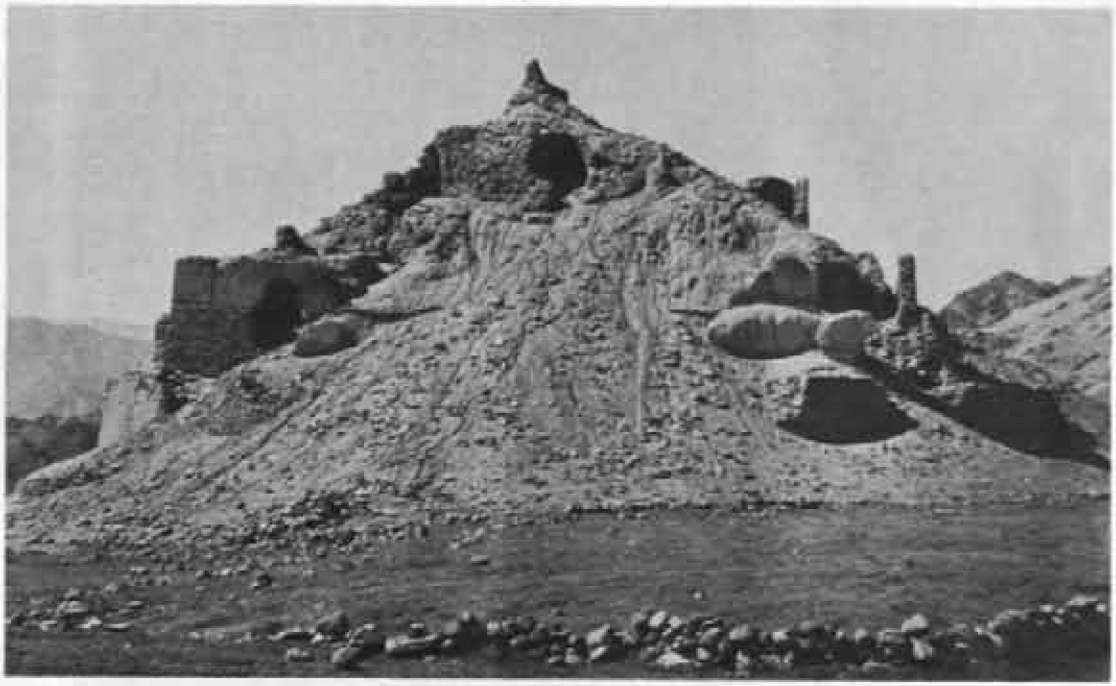
Sanghol: after conservation of the stupa. *See p. 169*



Tirumukkudal: Venkateshaperumal temple, before conservation. *See p. 178*



Tirumukkudal: Venkateshaperumal temple, after conservation. *See p. 178*



A. *Tiserru: stupa, before removal of debris. See p. 182*



B. *Tiserru: stupa, after removal of debris. See p. 182*



A. *Kiramchi: Temple 1, before repairs to entrance.* *See p. 183*



B. *Kiramchi: Temple 1, after repairs to entrance.* *See p. 183*



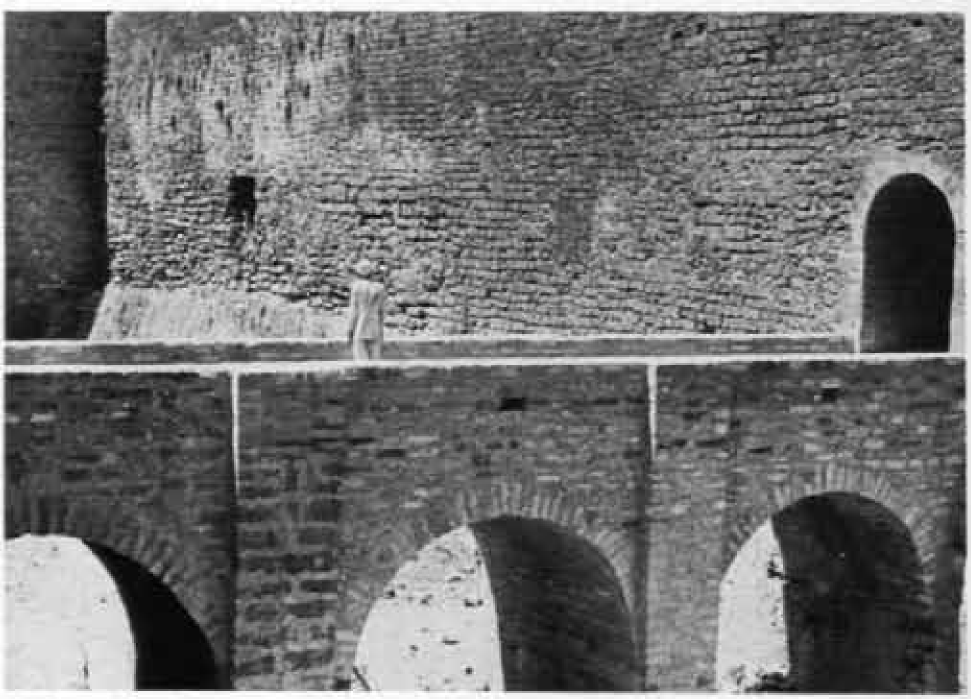
A. *Ramnagar: Nawa Mahal, before conservation. See p. 183*



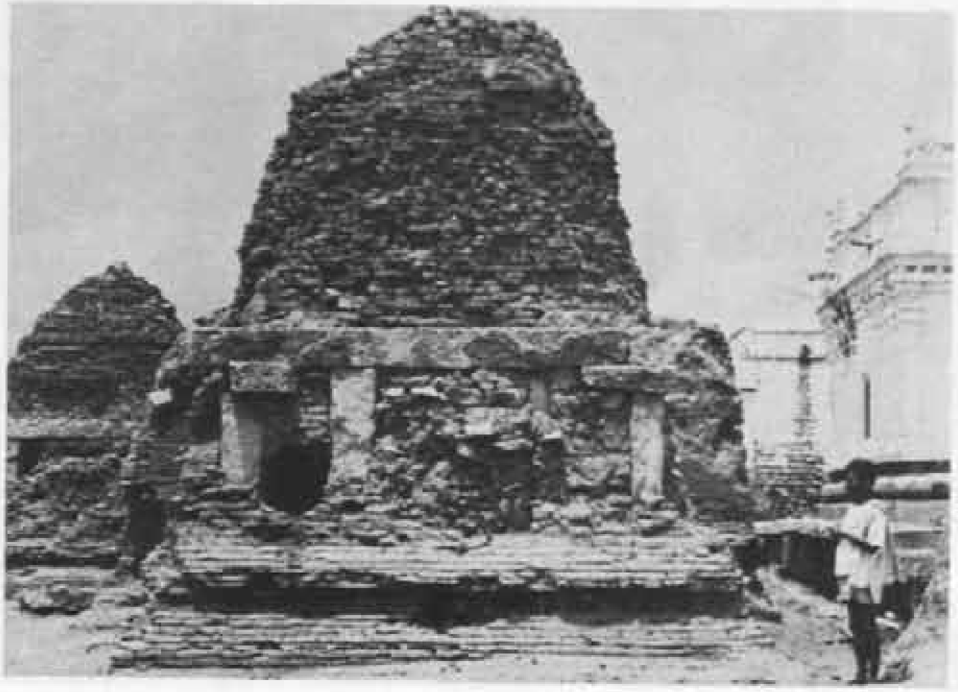
B. *Ramnagar: Nawa Mahal, after conservation. See p. 183*



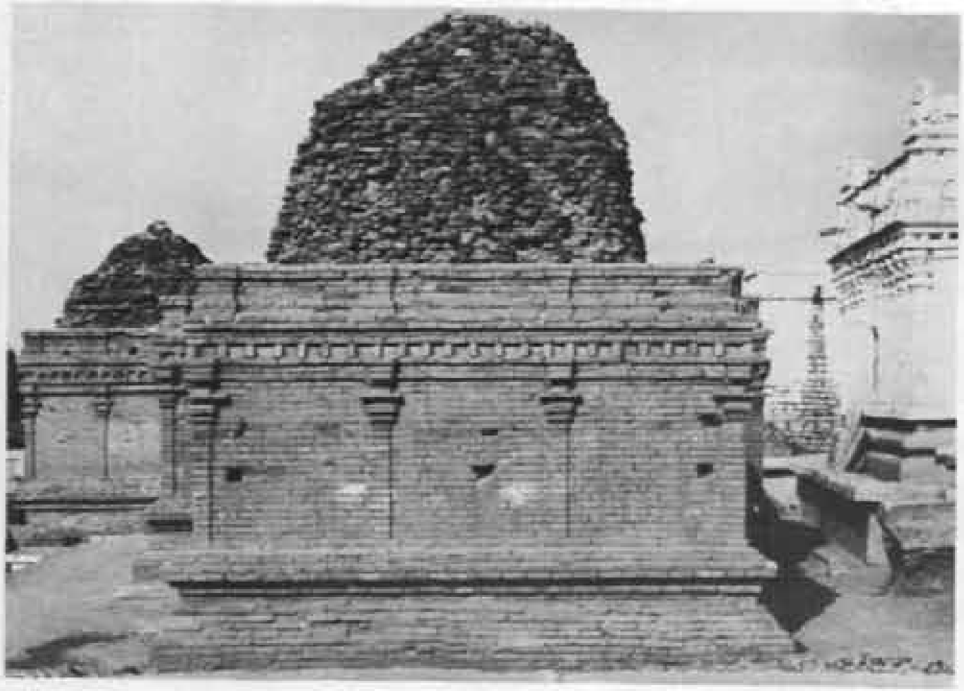
A. *Diu: fort, before repairs to culvert. See p. 184*



B. *Diu: fort, after repair to culvert. See p. 184*



A. *Aralaguppe: brick temple 4, before conservation.* *See p. 187*



B. *Aralaguppe: brick temple 4, after conservation* *See p. 187*



Tabo: paintings, before chemical treatment. See p. 196



Tabo: paintings, after chemical treatment. See p. 196

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